ENVIRONMENTAL NOISE STUDY
FOR THE
HELEN WOODWARD ANIMAL CENTER
IN RANCHO SANTA FE, CA

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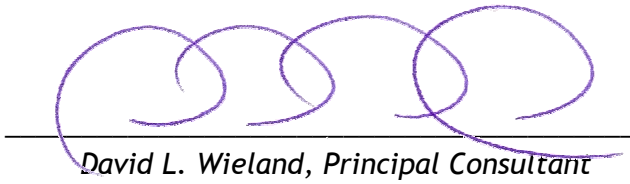

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1 Executive Summary

This report identifies and assesses the potential noise impacts associated with the construction and operation of the Helen Woodward Animal Center in the community of Rancho Santa Fe. The proposed project will involve the phased demolition, reconstruction, and renovation of the existing Center on its current site.

In order to identify the existing noise environment, measurements were taken at four locations throughout the study area. The introduction of new noise sources, such as construction activities, increased traffic, outdoor activities, parking lot activities, and mechanical equipment will result in a change to the noise environment at properties in the vicinity of the project.

Using the criteria established in this study, it may be concluded that the project will create a significant impact relative to the County's Noise Ordinance standards at the west property line during the daytime hours, and at the south property line during the daytime or nighttime hours when the emergency generator is running. No significant impacts are assessed for the noise-sensitive areas on the project site or adjacent to the project site. The following measures are recommended to mitigate the significant impacts associated with the project:

Project Design Considerations

1. Include noise limits in the procurement specifications for the air handlers and emergency generator.
2. Construct a 6'- high noise barrier along the west property line, and at the outdoor activity areas west of Building I.
3. Construct 10'-high noise barriers around the emergency generator.
4. Construct 8' to 10'-high walls around the rooftop air handlers at Building I and Building III.
5. Locate the rooftop air handlers at Building II within existing equipment wells that are at least 8' high above the roofline.

On-Going Conditions

6. Prohibit loudspeakers at the Therapeutic Riding Structure except for the use of temporary loudspeakers on one occasion per year with a Special Event Permit issued by the County of San Diego.
7. Prohibit noise-generating outdoor activities before 7:00 a.m. and after 10:00 p.m.
8. Prohibit use of outdoor public address systems.
9. Minimize the number of dogs permitted in the outdoor field areas of the project site at the same time.

Requirements for Project Implementation

10. Limit demolition and construction activities to the hours and days permitted by the County of San Diego.
11. Outfit all construction and demolition equipment with properly sized mufflers.
12. Locate noisy equipment items as far as practicable from the surrounding residential properties.
13. Construct the recommended noise barriers prior to site demolition and construction of the project to minimize construction noise levels.

With implementation of the recommended mitigation measures, there will be no significant noise impacts associated with the project.

2 Introduction / Project Description

The purpose of this study is to identify and assess the potential noise impacts associated with the construction and operation of the Helen Woodward Animal Center located 6461 El Apajo within the Rancho Santa Fe community in San Diego County. Figure 2-1 identifies the location of the project site.

The project consists of the phased demolition, reconstruction, and renovation of the existing 120,710 square foot Helen Woodward Animal Center (HWAC) on its current Rancho Santa Fe site. The site is approximately 11.9 acres in size, and the phased rebuilding of the Center anticipates approximately 87,339 square feet of new building space, referred to as Building I, Building III, and the Therapeutic Riding Structure, and approximately 41,013 square feet of renovated space referred to as Building II. In addition, approximately 4,098 square feet of new horse stalls will be located adjacent to Building II and approximately 9,218 square feet of new horse stalls will be located adjacent to the Therapeutic Riding Arena. A variety of exterior site amenities are planned including horse grazing pastures, lunging pen, walking path, corrals, children's activity fields with pre-fabricated shade structure, animal play and exercise fields, mechanical and equipment storage yard, and waste storage. The design has changed from a campus style plan in the original submittal, consisting of eight separate conditioned structures, to a more compact plan consisting of three conditioned structures, referred to as Building I, Building II, and Building III. Refer to Figure 2-2 for the project's site plan.

Building I will house the Adoptions Center and Club Pet. On a typical day Building I will house 190 dogs, 74 cats, and 5 exotics/barnyard animals. The hours of operation will be 7:30 a.m. until 6:30 p.m. seven days a week. During this time there will be about 37 employees and 17 volunteers on site. It is anticipated that there will be an average of 60 customer visits per weekday, and 82 customer visits per weekend.

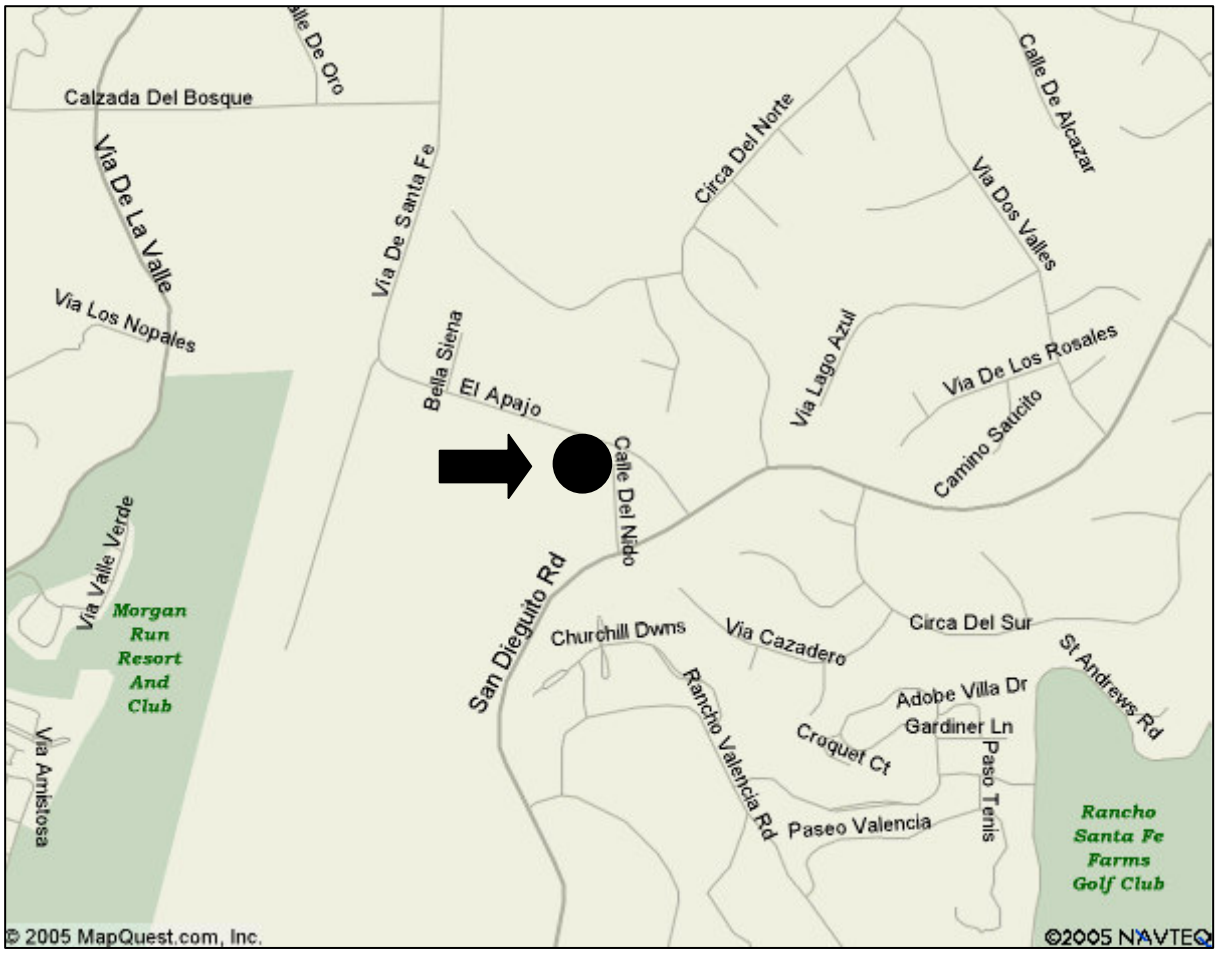


Figure 2-1. Project Study Area

Building II will house the Equine Hospital, the Education department, the Pet Encounter Therapy (P.E.T.) department, the AniMeals department, the Maintenance department, and Animal Care Education Services (A.C.E.S.). On a typical day Building II will house 22 dogs, 1 cat, and 84 exotics/barnyard animals. The hospital will be operational 24 hours per day, seven days per week. The remaining departments within Building II will be open various hours throughout the week, generally encompassing the hours from 5:30 a.m. to 5:30 p.m. on weekdays, and from 8:00 a.m. to 5:30 p.m. on weekends. Up to 29 employees and 19 volunteers will be working within the building at any given time. It is anticipated that there will be an average of 95 customer visits per weekday, 93 customer visits per weekend day, and up to 150 additional customer visits on Special Event days. During the 9-week summer camp, 115 additional customer visitors are anticipated on weekdays at the Education Department.

Building III will house the Rancho Santa Fe Veterinary Hospital and Administration. On a typical day Building III will house 77 dogs, 23 cats, and 3 exotics/barnyard animals. The hours of operation will generally be from 7:00 a.m. to 7:00 p.m. on weekdays, and from 8:00 a.m. to 7:00 p.m. on weekends. However, the hospital will be open for emergency/intensive care operations 24 hours a day, seven days a week. During this time there will be about 66 employees and 10 volunteers on site. It is

anticipated that there will be an average of 103 customer visits per weekday, 78 customer visits per weekend, and up to 24 additional customer visits on Special Event days.

The Therapeutic Riding department will consist of stalls, an unconditioned riding arena, storage, as well as 2,278 square feet of conditioned space for offices and a viewing gallery inside the riding arena. On a typical day the Therapeutic Riding department will house 16 horses and 5 employee-owned dogs. The facility will be in operation between 8:00 a.m. and 5:30 p.m. Tuesday through Saturday. Up to 8 employees and 10 volunteers will be working at the Therapeutic Riding department at any given time. It is anticipated that there will be an average of 15 customer visits per weekday and 20 customer visits per weekend day.

There are planned to be 256 parking spaces on site. Two hundred one (201) of these spaces are anticipated to be used on a daily basis. An additional 55 spaces are planned to accommodate the increased levels of traffic during special events; however, they will receive no special designation. The hours of operation for the Center's departments and tenants are staggered in terms of time of day and day of the week; therefore, it is reasonable to assume that the 201 spaces will not be concurrently occupied on a daily basis.

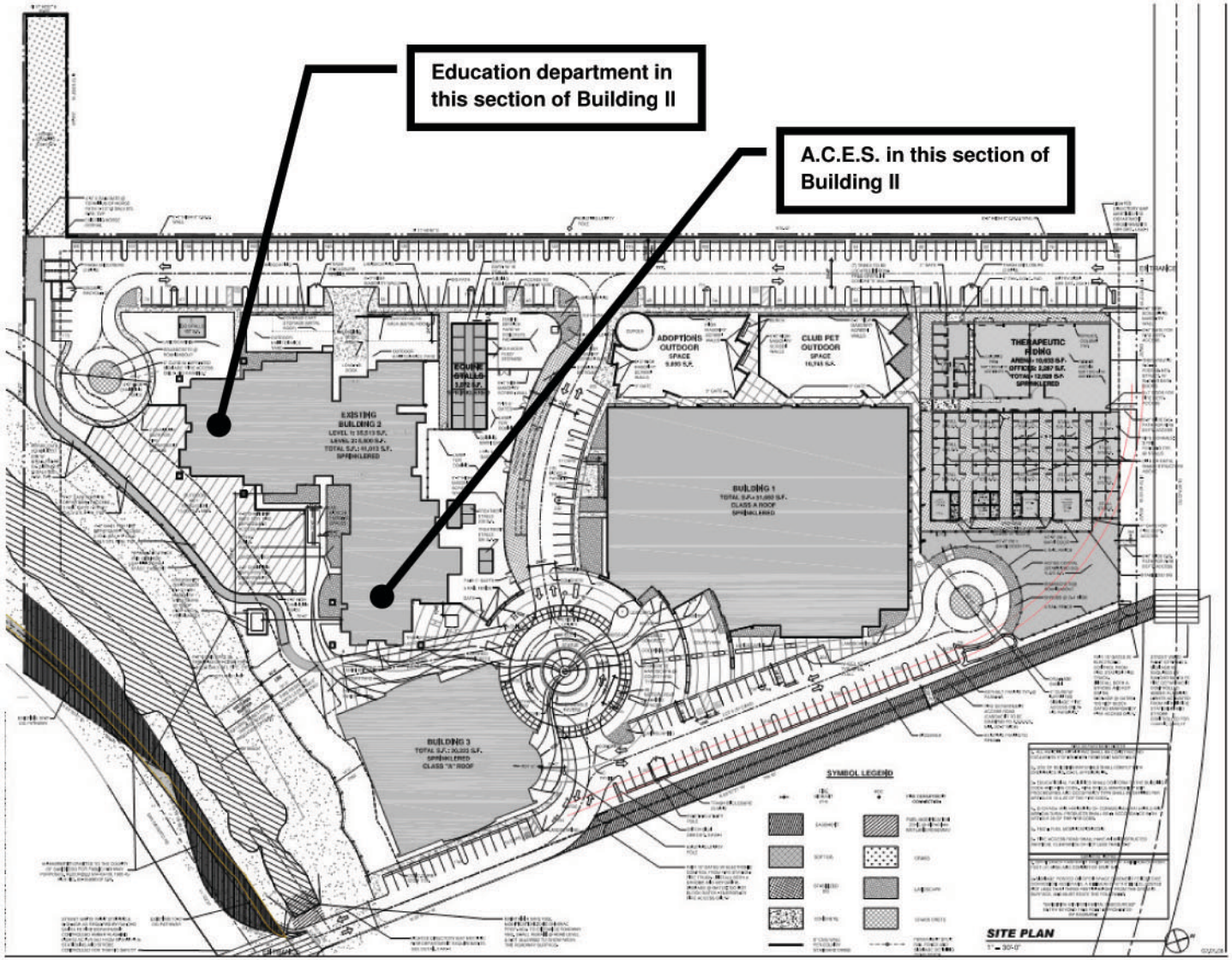


Figure 2-2. Project Site Plan and Noise-Sensitive On-Site Uses

3 Noise Descriptors

The following sections briefly describe the noise descriptors that will be used throughout this study:

3.1 Decibels

Sound pressures can be measured in units called microPascals (µPa). However, expressing sound levels in terms of µPa would be very cumbersome since it would require a wide range of very large numbers. For this reason, sound pressure levels are described in logarithmic units of ratios of actual sound pressures to a reference pressure squared. These units are called bels. In order to provide a finer resolution, a bel is subdivided into 10 decibels, abbreviated dB.

Since decibels are logarithmic units, sound pressure levels cannot be added or subtracted by ordinary arithmetic means. For example, if one automobile produces a sound pressure level of 70 dB when it passes an observer, two cars passing simultaneously would not produce 140 dB. In fact, they would combine to produce 73 dB. This same principle can be applied to other traffic quantities as well. In other words, doubling the traffic volume on a street or the speed of the traffic will increase the traffic noise level by 3 dB. Conversely, halving the traffic volume or speed will reduce the traffic noise level by 3 dB.

3.2 A-Weighting

Sound pressure level alone is not a reliable indicator of loudness. The frequency or pitch of a sound also has a substantial effect on how humans will respond. While the intensity of the sound is a purely physical quantity, the loudness or human response depends on the characteristics of the human ear.

Human hearing is limited not only to the range of audible frequencies, but also in the way it perceives the sound pressure level in that range. In general, the healthy human ear is most sensitive to sounds between 1,000 Hz and 5,000 Hz, and perceives both higher and lower frequency sounds of the same magnitude with less intensity. In order to approximate the frequency response of the human ear, a series of sound pressure level adjustments is usually applied to the sound measured by a sound level meter. The adjustments, or weighting network, are frequency dependent.

The A-scale approximates the frequency response of the average young ear when listening to most ordinary everyday sounds. When people make relative judgments of the loudness or annoyance of a sound, their judgments correlate well with the A-scale sound levels of those sounds. A range of noise levels associated with common in- and outdoor activities is shown in Figure 3-1.

The A-weighted sound level of traffic and other long-term noise-producing activities within and around a community varies considerably with time. Measurements of this varying noise level are accomplished by recording values of the A-weighted level during representative periods within a specified portion of the day.

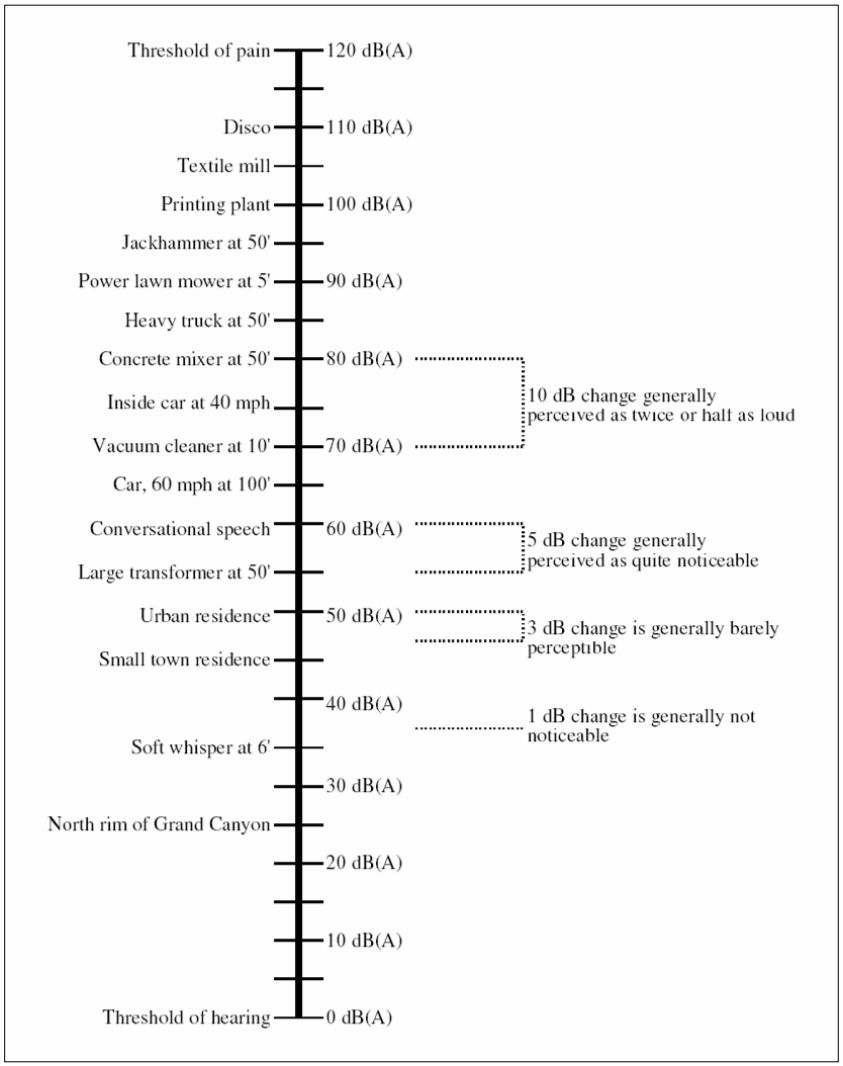


Figure 3-1. Common Noise Sources and A-Weighted Noise Levels

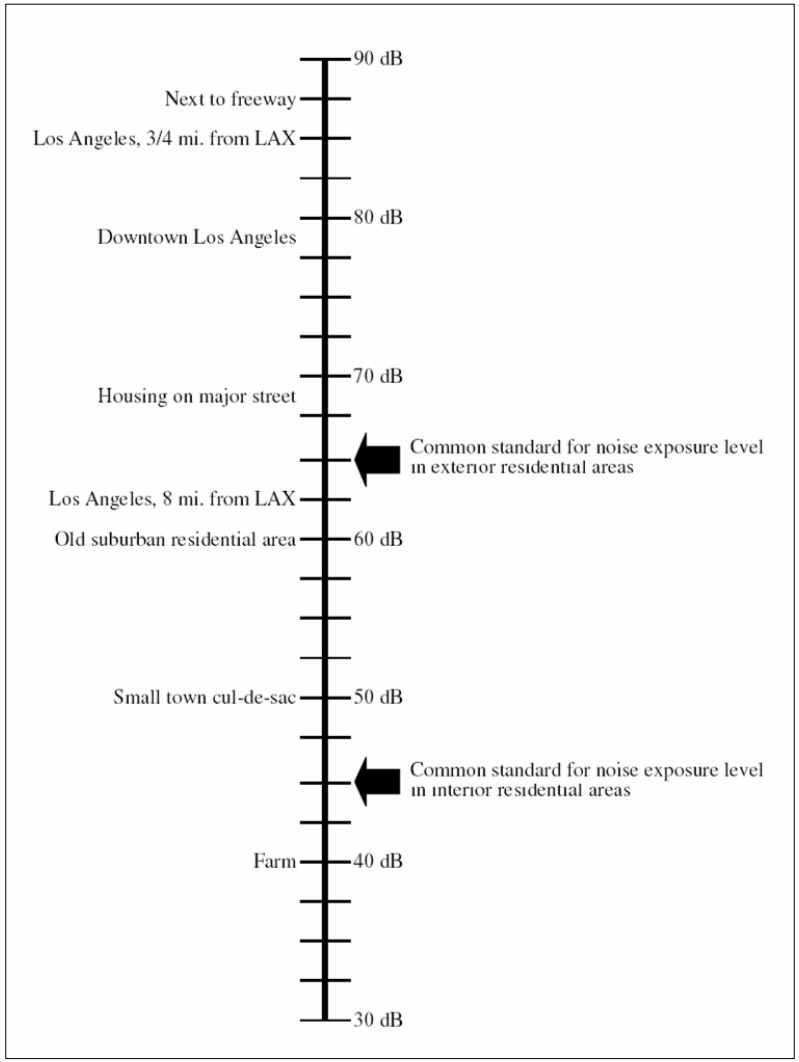


Figure 3-2. Common CNEL Noise Exposure Levels at Various Locations

3.3 Community Noise Equivalent Level (CNEL)

It is recognized that a given level of noise may be more or less tolerable depending on the duration of exposure experienced by an individual. There are numerous measures of noise exposure that consider not only the A-level variation of noise but also the duration of the disturbance. The State Department of Aeronautics and the California Commission on Housing and Community Development have adopted the community noise equivalent level (CNEL). This measure weights the average noise levels for the evening hours (7:00 p.m. to 10:00 p.m.), increasing them by 5 dB, and weights the late evening and morning hour noise levels (10:00 p.m. to 7:00 a.m.) by 10 dB. The daytime noise levels are combined with these weighted levels and are averaged to obtain a CNEL value. Figure 3-2 indicates the outdoor CNEL at typical locations.

4 Noise Criteria

The following sections discuss the various noise criteria that have been considered for this study.

4.1 County of San Diego Code

The San Diego County Code states that:

> *…[i]t shall be unlawful for any person to cause or allow the creation of any noise to the extent that the one-hour average sound level, at any point on or beyond the boundaries of the property on which the sound is produced, exceeds the applicable limits set forth below…*

Table 4-1. San Diego County Noise Standards

Zone	One-Hour Average Sound Level	
	Daytime 7 a.m. to 10 p.m.	Nighttime 10 p.m. to 7 a.m.
R-S, R-D, R-R, A-70, S-80, S-87, S-88, S-90, R-V, and R-U Use Regulations with a density of less than 11 dwelling units per acre	50 dB(A)	45 dB(A)
R-R0, R-C, R-M, C-30, S-84, S-86, R-V and R-U Use Regulations with a density of 11 or more dwelling units per acre	55 dB(A)	50 dB(A)
S-94 and all other commercial zones	60 dB(A)	55 dB(A)
M-50, M-52, M-54	70 dB(A)	70 dB(A)
S-82, M-58, A-72 and all other industrial and agricultural zones	75 dB(A)	75 dB(A)

If the measured ambient level exceeds the applicable limit noted above, the allowable one-hour average sound level shall be the ambient noise level. However, this study will only assess impacts relative to the standards identified in Table 4-1 above, and will not adjust these standards to account for existing ambient noise levels.

The sound level limit at a location on a boundary between two zoning districts is the arithmetic mean of the respective limits for the two districts. The zoning is S-88 at both the Helen Woodward Animal Center and the Horizon North County property to the west, S-80 at the residential community to the south, and RR-1/0.5 at the properties to the north. Therefore, the standard at the north, south and west property lines is 50 dB(A) during the daytime hours and 45 dB(A) during the nighttime hours. The zoning at the Fairbanks Village Plaza shopping center to the east of the project site is C-36. Therefore, the standard at the east property line is 55 dB(A) during the daytime hours and 50 dB(A) during the nighttime hours. (These values are the arithmetic mean of the S-88 and the C-36 standards.)

The County Code also states that it is unlawful to operate construction equipment at any construction site on Sundays or on a public holiday. On Monday through Saturday, it is unlawful to operate construction equipment except between the hours of 7:00 a.m. and 7:00 p.m. It is also unlawful to operate any construction equipment so as to cause at or beyond the property line of any property upon which a legal dwelling unit is located an average sound level greater than 75 dB between the hours of 7:00 a.m. and 7:00 p.m.

4.2 County of San Diego General Plan

Policy 4b of the County's Noise Element of the General Plan states that:

1. Whenever possible, development should be planned so that noise-sensitive areas are not exposed to a CNEL in excess of 55 dB.
2. An acoustical study should be required when it appears that new development will subject noise-sensitive areas to a CNEL of 60 dB or greater.
3. If an acoustical study shows that the CNEL at any noise-sensitive property will exceed 60 dB, the development should not be approved unless:
    a. Modifications to the development will be made to reduce the exterior CNEL below 60 dB; or
    b. If it is infeasible to reduce the exterior CNEL below 60 dB, then modifications to the development will be made to reduce the interior CNEL below 45 dB; and
    c. If finding "b" above is made, a further finding is made that there are specific overriding social or economic considerations which warrant approval of the development without modifications as described in "a" above.
4. If the acoustical study shows that the CNEL will exceed 75 dB at any noise-sensitive area, the development should not be approved.

"Noise-sensitive area" is defined as the building site of any residence, hospital, school, library, or similar facility where quiet is an important attribute of the environment. The only areas within the proposed Helen Woodward Animal Center considered to be noise-sensitive are the education department and A.C.E.S. in Building II. At these locations, the County's General Plan provides the following exemption: "For the rooms in 'Noise Sensitive Areas', which are usually occupied only a

part of the day (schools, libraries, or similar), the interior one-hour average sound level, due to noise outside, should not exceed 50 decibels".

5 Thresholds of Significance

Based on the noise criteria discussed above, and the CEQA guidelines, a significant impact will be assessed if the project will result in:

- Exposure of persons to or generation of noise levels in excess of standards established in the local general plan or noise ordinance, or applicable standards of other agencies. This impact will occur if: (1) the project traffic increases the CNEL above 60 dB at existing noise-sensitive areas; (2) the 1-hour average noise level due to outside sources exceeds 50 dB(A) within the Center's education department and A.C.E.S.; (3) the operation of the project produces a CNEL greater than 60 dB at the nearest noise-sensitive areas; or (4) the 1-hour average noise level due to activities at the proposed project exceeds the property line standards identified in Section 4.1.
- Exposure of persons to, or generation of, excessive groundborne vibration or groundborne noise levels.
- A substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project. This impact will occur if: (1) project traffic or project operation increases the CNEL at any noise-sensitive area by an audible amount of 3 dB or more when the CNEL is 60 dB or greater without the project; or (2) if activity noise levels at the proposed animal center increase the one-hour average noise level at any property line by an audible amount of 3 dB(A) or more when the noise level exceeds the standards of Section 4.1 without the project.
- A substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. This condition will occur if the construction equipment generates an average noise level in excess of 75 dB(A) at the nearest residential property line.
- Exposure of persons residing or working in the project area to excessive noise levels as a result of activities at an airport. Since there are no airports in the vicinity of the study area, this issue will not be addressed in the report.

6 Existing Noise Environment

Traffic on the local streets is the predominant source of noise that currently affects the study area. The following sections discuss the noise measurements and analyses that were conducted to identify the existing traffic noise levels in the study area.

6.1 Noise Measurements

In order to document the existing noise environment, measurements were obtained at four locations throughout the study area. (Refer to Figure 6-1.) The locations are identified as follows:

#1. In the parking lot of the fire station across El Apajo from the Helen Woodward Animal Center.

#2. In the parking lot of the Horizon North County church/school, at the offset of the nearest playground area to the Helen Woodward Animal Center.

#3. In the parking lot of the Fairbanks Village Plaza shopping center adjacent to the Helen Woodward Animal Center.

#4. In the rear yard at 15490 Pimlico Court.

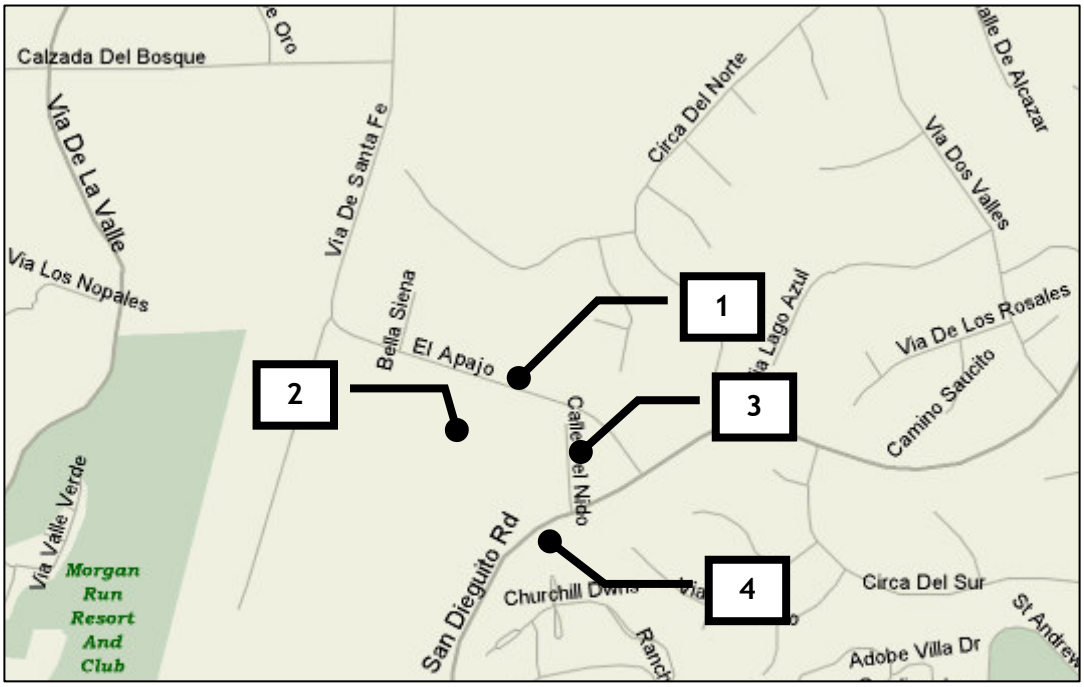


Figure 6-1. Noise Measurement Locations

At location #4, the measurement was obtained over a continuous 24-hour period. The measurement was obtained for a period of 20 to 30 minutes at the remaining locations. To obtain the measurements, the microphone was positioned at a height of 5 feet above the ground. The results of the noise measurements, provided in Appendix I, are summarized in Table 6-1.

Table 6-1. Summary of Noise Measurements

Location #	Location Description	Measurement Period	Measured Average Noise Level, dB(A)	CNEL, dB
1	Fire station on El Apajo	10:42 AM to 11:02 AM	66	N/A
2	Horizon North County	1:40 PM to 2:00 PM	56	N/A
3	Shopping center	2:10 PM to 2:34 PM	51	N/A
4	15490 Pimlico Ct.	24 hours	51-57 (daytime) 40-50 (nighttime)	56

The instrumentation used to obtain the noise measurements consisted of integrating sound level meters (Models 712 and 870) and acoustical calibrators (Models CAL150 and CAL 250) manufactured by Larson Davis Laboratories. The accuracy of the calibrators is maintained through a program established by the manufacturer, and is traceable to the National Bureau of Standards. All instrumentation meets the requirements of the American National Standards Institute (ANSI) S1.4-1971.

6.2 Traffic Noise Exposures

A traffic noise analysis was conducted using the Sound32 traffic noise prediction model developed by Caltrans. This model was calibrated to site conditions based on noise measurements adjacent to the arterials considered in the traffic impact study conducted by Linscott, Law & Greenspan Engineers (Reference 2). During the course of the measurements, traffic speeds were obtained by use of a radar gun, and vehicle counts were obtained from a videotape of the traffic. The calibration procedure is provided in Appendix II. The results of the modeling effort, provided in Appendix III, are summarized in Table 6-2.

Table 6-2. Existing Traffic Noise Levels

Street Segment	Unmitigated CNEL @ 50'	Distance to CNEL Contour		
		60 dB	65 dB	70 dB
El Apajo				
Bella Sienna to San Dieguito	71 dB	450'	180'	65'
El Escondido del Dios Highway				
East of El Camino del Norte	72 dB	295'	145'	70'
Paseo Delicias				
West of El Camino del Norte	72 dB	285'	140'	65'
San Dieguito Road				
South of El Apajo	68.5 dB	175'	85'	---
Via de La Valle				
Via de Santa Fe to Paseo Delicias	69.5 dB	205'	100'	---
Via de Santa Fe				
South of Calzada del Bosque	72 dB	530'	215'	78'

7 Future Noise Environment within the Study Area

The land uses and noise-sensitive properties in the immediate vicinity of the project site include the Horizon North County church and school along the western property line, single-family homes to the north across El Apajo, the Fairbanks Village Plaza shopping center along the eastern property line, and single-family homes to the south across San Dieguito Road. For ease of presentation, the discussion of future conditions in the study area with the project has been divided into two sections: construction and operation. Each is discussed in greater detail in the following sections.

7.1 Construction

In compliance with the County Code requirements, construction of the project will occur only between 7:00 a.m. and 7:00 p.m. on Monday through Saturday. There will be no construction activities on Sundays or legal holidays.

Construction noise levels in the vicinity of the project will fluctuate depending on the particular type, number and duration of use of various pieces of construction equipment. The exposure of persons to the periodic increase in noise levels will be short-term. Table 7-1 shows typical noise levels associated with various types of construction-related machinery.

Table 7-1. Construction Equipment Noise Levels

Equipment Type	Typical Average Equipment Noise Level at 100 ft. in dB(A)[a]
Air Compressor	69
Backhoe	69
Concrete Mixer	69
Concrete Pump	69
Crane	69
Dozer	69
Generator	69
Grader	69
Jackhammer	69
Loader	69
Paver	74
Pneumatic Tools	74
Pump	69
Saws	69
Scraper	74
Tractor	69
Trucks	69
Source: U. S. Environmental Protection Agency, 1971. *Notes:* a. With noise controls applied. Obtainable by selecting	

quieter procedures or machines and implementing noise control features such as improved mufflers, use of silencers, shields, shrouds, ducts and engine enclosures.

Construction of the proposed project can be divided into two parts: (1) demolition, site clearing and grading, and (2) construction. Since the exact construction schedule, number and type of equipment to be used, and duration of use are not known at this time, the analysis of one-hour average noise levels is based on a number of assumptions, as shown in Table 7-2.

Based on the estimated combined construction noise levels identified in Table 7-2, an analysis was conducted to estimate the noise levels that will be experienced at the nearest residential property lines. This analysis is provided in Table 7-3. Figure 7-1 identifies the source and receiver locations considered in the analysis.

Referring to the analysis of Table 7-3, the average noise level produced by construction of the project is not expected to exceed the County's standard of 75 dB(A). Therefore, the impact of construction noise is not significant.

Table 7-2. Estimated Combined Noise Level during Construction

Construction Equipment	Avg. Equipment Noise Level @ 100'	Usage Factor[b]	Avg. Equipment Noise Level @ 100' with Usage Factor
Demolition, Site Clearing & Grading			
1 front loader	69 dBA	0.4	65 dBA
1 backhoe	69 dBA	0.16	61 dBA
1 dozer	69 dBA	0.4	65 dBA
1 truck	69 dBA	0.4	65 dBA
Combined			*70 dBA*
Building Construction			
1 truck	69 dBA	0.4	65 dBA
1 concrete mixer	69 dBA	0.4	65 dBA
1 concrete pump	69 dBA	0.4	65 dBA
1 crane	69 dBA	0.16	61 dBA
1 pump	69 dBA	1.0	69 dBA
1 generator	69 dBA	1.0	69 dBA
1 compressor	69 dBA	1.0	69 dBA
Combined			*75 dBA*

Source: U. S. Environmental Protection Agency, 1971.

Notes:

b. Percentage of time equipment is operating at noisiest mode in most used phase on site.

Figure 7-1. Location of Construction Activity and Noise Modeling Locations

Table 7-3. Analysis of Estimated Construction Noise Levels

Noise-Sensitive Location	Construction Phase	Estimated Avg. Level @ 100', dB(A)	Attenuation Due to Distance, dB(A)[c]	Estimated Avg. Level @ Sensitive Location, dB(A)	Estimated Construction Noise + Ambient, dB(A)	Estimated Increase due to Construction, dB
Existing residential property line to the southeast	Site Clearing Construction	70 75	-17 (750')	53 58	57-58 60-61	1-2 4-5
Existing residential property line to the northwest	Site Clearing Construction	70 75	-16 (645')	54 59	58-59 60-61	2-3 4-5

Notes:

c. Attenuation is based on a reduction of 6 dB for every doubling of distance from the source. Distance is calculated from the center of the project site.

Groundborne vibration is measured in terms of the velocity of the vibration oscillations. As with noise, a logarithmic decibel scale (VdB) is used to quantify vibration intensity. When groundborne vibration exceeds 75 to 80 VdB, it is usually perceived as annoying to building occupants. The degree of annoyance is dependent upon type of land use, individual sensitivity to vibration, and the frequency of the vibration events. Typically, vibration levels must exceed 100 VdB before building damage occurs.

The primary vibratory source during the construction of the project will be large bulldozers. Based on published data (Reference 6), typical bulldozer activities generate an approximate vibration level of 87 VdB at a distance of 25 feet. At the distance of the nearest building to the project site (about 260 feet) the estimated vibration level will be 67 VdB. This is below the threshold at which building damage occurs, and below the perception threshold of 75 to 80 VdB. Therefore, the impact of vibration is not significant.

7.2 Project Operation

The proposed project will introduce a number of new noise sources into the study area. (It is noted that some of these "new" sources will only appear to be new to the surrounding community since they already exist but will be moved from their current location to one that is closer or less shielded by intervening buildings.) These noise sources include: traffic, outdoor activities, parking lot activities, and mechanical equipment. Each of these sources is discussed in greater detail in the following sections. It is noted that all dogs will be kenneled indoors at the new facility, as opposed to the current facility where they are kenneled outdoors. This should significantly reduce, or eliminate, a current source of the noise at the project site.

Operation of the project will be passive and will not generate ground-borne noise or vibration levels.

7.2.1 Traffic

Using data provided by Linscott, Law & Greenspan Engineers, analyses were conducted to identify the future traffic noise exposures that will occur in the study area, both with and without the project.

The analyses were conducted using the Sound32 traffic noise prediction model developed by Caltrans. The model was used to estimate traffic noise levels adjacent to various reaches of street in the study area based on traffic volumes, speeds, truck mix, site conditions, and distance from the roadway to the receptor. The California reference energy mean emission (Calveno) levels developed by Caltrans were used in the prediction model. The results of the analyses are provided in Table 7-4 for the "Existing + Project" case, and in Table 7-5 for the "Existing + Project + Cumulative" case. Each table identifies the traffic data used in the analysis and the estimated CNEL generated by the traffic. Appendix III provides the complete analysis. Referring to Tables 7-4 and 7-5, it may be concluded that:

- The project will increase the traffic-generated CNEL in the study area by at most 0.5 dB. This is less than the criterion of 3 dB; therefore the impact is not significant.

- Project traffic will not increase the CNEL above the 60 dB threshold of significance at noise-sensitive properties in the study area. Therefore, the impact is not significant.

Table 7-4. Existing + Project Traffic Noise Exposure Levels

Street Segment	Average Daily Traffic		CNEL @ 50'		Change in CNEL Due to Project
	Without Project	With Project	Without Project	With Project	
El Apajo					
Bella Sienna to San Dieguito	13,560	13,610	71 dB	71 dB	0 dB
El Escondido del Dios Highway					
East of El Camino del Norte	20,270	20,290	72 dB	72 dB	0 dB
Paseo Delicias					
West of El Camino del Norte	18,950	18,970	72 dB	72 dB	0 dB
San Dieguito Road					
South of El Apajo	12,990	13,010	68.5 dB	68.5 dB	0 dB
Via de La Valle					
Via de Santa Fe to Paseo Delicias	11,040	11,100	69.5 dB	69.5 dB	0 dB
Via de Santa Fe					
South of Calzada del Bosque	13,190	13,260	72 dB	72 dB	0 dB

Table 7-5. Existing + Project + Cumulative Traffic Noise Exposure Levels

Street Segment	Average Daily Traffic		CNEL @ 50'		Change in CNEL Due to Project
	Without Project	With Project	Without Project	With Project	
El Apajo					
Bella Sienna to San Dieguito	14,070	14,120	71 dB	71 dB	0 dB
El Escondido del Dios Highway					
East of El Camino del Norte	21,310	21,330	72.5 dB	72.5 dB	0 dB
Paseo Delicias					
West of El Camino del Norte	20,590	20,610	72 dB	72.5 dB	0.5 dB
San Dieguito Road					
South of El Apajo	13,290	13,880	69 dB	69 dB	0 dB
Via de La Valle					
Via de Santa Fe to Paseo Delicias	12,550	12,610	70 dB	70 dB	0 dB
Via de Santa Fe					
South of Calzada del Bosque	13,860	13,930	72 dB	72 dB	0 dB

7.2.2 Outdoor Activities

Outdoor activities will occur primarily around the Therapeutic Riding Structure near the northwest corner of the project site, at the outdoor spaces west of Building I, and at the outdoor space south of Building II. The only significant noise source at the existing Therapeutic Riding Structure is a loudspeaker system. However, at the new Structure no loudspeaker system will be permanently installed. As a result, there will be no significant noise sources associated with the Therapeutic Riding Structure. Temporary loudspeakers will be used on one occasion per year under a Special Event Permit issued by the County of San Diego.

Measurements obtained during dog "run-arounds" and dog training exercises at the existing facility indicate average noise levels that range from 57.5 dB(A) to 65 dB(A) at a distance of 50 feet. To provide a conservative assessment of noise levels at the Club Pet and Adoptions outdoor spaces west of Building I, the higher value of 65 dB(A) will be used in this study.

The outdoor activity area south of Building II is part of the Education Department, and will be used throughout the year to educate children about animal care in a controlled and orderly classroom-like environment. Typically, in the outdoor area, groups of children are limited to 15 to 20 under the supervision of one or more counselors. For nine weeks during the summer up to 160 children could be in the outdoor area at a time for a period of ½ hour as part of the facility's summer camp program. No play equipment will be located in the outdoor area and children will not be permitted to run around and make a lot of noise because of the negative effect it would have on the animals. Such animals will include exotics such as llamas, rabbits, tortoises, etc., and no more than one dog. Because of the classroom-like environment, the primary noise source will be a counselor speaking to or lecturing to the children, with the children responding with answers to questions.

Based on published literature[1], it is estimated that the average speech level that will be produced in the outdoor activity area is 73 dB(A) at a distance of 1 meter (3.28 feet) for 10 children speaking simultaneously with raised voices and 10 children speaking simultaneously with normal voices. Assuming that this level occurs continuously for ½ hour, the 1-hour Leq will be 70 dB(A) at this same distance. During summer camps, it is assumed as a worst case that up to 80 children will be speaking simultaneously with raised voices and 80 with normal voices. This produces an average noise level of 82 dB(A) at a distance of 1 meter (3.28 feet). Assuming that this level occurs continuously for ½ hour, the 1-hour Leq will be 79 dB(A) at this same distance.

Projecting the outdoor activity levels to the nearest property lines and sensitive receivers, and taking into account attenuation due to distance, buildings, and the proposed 6'-high walls around the outdoor activity areas west of Building I, yields the following estimated noise levels:

Table 7-6. Outdoor Activity Noise Levels

Location	Estimated Noise Level and Distance from Source			Total Est. Noise Level
	Club Pet	Adoptions	Education	
North Prop. Line	41.5 dB(A), 275'	39.0 dB(A), 415'	30.5 dB(A), 865'	43.5 dB(A)
West Prop. Line	47.5 dB(A), 110'	47.5 dB(A), 110'	41.5 dB(A), 245'	51.0 dB(A)
South Prop. Line	36.5 dB(A), 735'	38.5 dB(A), 595'	46.0 dB(A), 145'	47.0 dB(A)
East Prop. Line	43.5 dB(A), 330'	37.5 dB(A), 380'	36.5 dB(A), 425'	45.0 dB(A)
Residences to north	37.5 dB(A), 380'	34.5 dB(A) , 520'	29.5 dB(A), 970'	39.5 dB(A)
Residences to south	30.5 dB(A), 850'	31.5 dB(A), 735'	40.0 dB(A), 300'	41.0 dB(A)
Horizon Center	47.5 dB(A), 110'	47.5 dB(A), 110'	41.5 dB(A), 245'	51.0 dB(A)
Fairbanks Village	43.5 dB(A), 330'	37.5 dB(A), 380'	36.5 dB(A), 425'	45.0 dB(A)

7.2.3 Parking Lot Activities

The predominant noise sources associated with parking lot activities include car doors slamming; cars starting; cars accelerating away from the parking stalls; and people talking, shouting and laughing. In order to identify the noise levels generated by parking lot activities, measurements were obtained as part of a previous study (Reference 10) were used in the analysis. These measurements were obtained by placing a sound level meter on the adjacent property opposite the approximate center of the parking lot. The microphone height was 12 feet in order to minimize any barrier effects resulting from the six-foot high wall that separates the measurement site from the parking lot. During the course of the measurements, a technician noted the number of vehicles that entered and left the parking lot, as well as the parking lot row at which the activities occurred. With this information, it was possible to determine that a typical vehicle entering or leaving a parking lot produces an Leq of 36.5 dB(A) at a distance of 50 feet.

Parking lot activities at the proposed Center will be sporadic in nature. To estimate the 1-hour average noise level that will be generated by these activities, an analysis was conducted using the measured data identified above, together with traffic data provided by Linscott, Law & Greenspan Engineers. The traffic data indicates that the busiest hour in the western parking area served by the entry from El

[1] Reference 8, page 16.2.

Apajo will be in the afternoon when 3 vehicles arrive at, and 15 vehicles leave, the Center. At the eastern parking area, which is served by the entry from San Dieguito Road, the busiest hour will be in the morning when 33 vehicles arrive at, and 6 vehicles leave, the Center. The results of the analysis, provided in Table 7-7, indicate that the unmitigated 1-hour average noise level (Leq) generated by the parking lot activities will be about 49 dB(A) at a distance of 50 feet from the approximate center of the western parking area, and about 52.5 dB(A) at the same distance from the approximate center of the eastern parking area.

Projecting this value to the distance of the nearest property lines yields estimated activity noise levels of 42.5 dB(A) at the north property line (a distance of about 105 feet), 52.5 dB(A) at the east property line (a distance of about 51 feet), 36 dB(A) at the south property line (a distance of about 225 feet), and 56.5 dB(A) at the west property line (a distance of about 22 feet). At the nearest sensitive receptors it is estimated that the noise level will be 36.5 dB(A) at the residences north of the project site, 32.5 dB(A) at the homes south of the project site, 56.5 dB(A) at the Horizon Center west of the site, and 52.5 dB(A) at the Fairbanks Village Plaza east of the site.

Table 7-7. Analysis of Parking Lot Activity Noise Levels

Western Parking Lot

Total # of vehicles leaving site during peak hour:	15
Total # of vehicles entering site during peak hour:	3
Leq of 1 vehicle entering parking lot, @ 50':	36.6 dB(A)
Leq of 1 vehicle leaving parking lot, @ 50':	36.6 dB(A)
Correction for # of vehicles entering from El Apajo:	4.8 dB(A)
Correction for # of vehicles leaving on El Apajo:	11.8 dB(A)
Total Leq for vehicles entering from El Apajo, @ 50':	41.4 dB(A)
Total Leq for vehicles leaving on El Apajo, @ 50':	48.4 dB(A)
Total Leq for vehicles using El Apajo, @ 50':	49.2 dB(A)

Eastern Parking Lot

Total # of vehicles leaving site during peak hour:	6
Total # of vehicles entering site during peak hour:	33
Leq of 1 vehicle entering parking lot, @ 50':	36.6 dB(A)
Leq of 1 vehicle leaving parking lot, @ 50':	36.6 dB(A)
Correction for # of vehicles entering from San Dieguito:	15.2 dB(A)
Correction for # of vehicles leaving on San Dieguito:	7.8 dB(A)
Total Leq for vehicles entering from San Dieguito, @ 50':	51.8 dB(A)
Total Leq for vehicles leaving on San Dieguito, @ 50':	44.4 dB(A)
Total Leq for vehicles using San Dieguito, @ 50':	52.5 dB(A)

7.2.4 Mechanical Equipment

The proposed project will include the addition of the following major mechanical equipment items at the site:

Table 7-8. List of Mechanical Equipment

Equipment Type	Location[a]	Acoustical Data[b]	Source of Acoustical Data
Air handler unit (50 ton)	Bldg. I roof	LwA = 94 dBA	McQuay Model RPS050C
Air handler unit (20 ton)	Bldg. II roof	LwA = 90.5 dBA	McQuay Model RPS020C
Air handler unit (50 ton)	Bldg. III roof	LwA = 94 dBA	McQuay Model RPS050C
500 kW emergency generator	South of Bldg. II	LpA = 75 dBA @ 23'	Supplier, Kohler Model 500REOZVB

Notes:

a. Refer to Figure 7-2.
b. LwA = A-weighted sound power level. LpA = A-weighted sound pressure level at specified distance from the source.

Using the manufacturers' data, a computer model was developed to analyze the estimated exterior noise levels that will be experienced at the property lines. Figure 7-2 identifies the locations of the mechanical equipment as well as the six modeling locations (labeled M1 through M6) considered in the analysis. It is noted that the project design includes 8'-high walls around each of the air handlers on the roof of Building I, and Building III has 10'-high walls forming a pen around the two rooftop air handlers. At Building II, the rooftop air handlers will be located in existing equipment wells with walls that are at least 8'-high on all four sides.

Assuming that all of the equipment runs simultaneously, it is estimated that on a typical day (i.e., without the emergency generator) the noise level generated by the mechanical equipment will be 40.5 to 43 dB(A) at the west property line, 40 dB(A) at the south property line, 39 dB(A) at the north property line, and 36.5 to 41 dB(A) at the east property line. At the nearest sensitive receptors it is estimated that the noise level will be 37 dB(A) at the residences north of the project site, 41 dB(A) at the homes south of the project site, 40.5 to 43 dB(A) at the Horizon Center west of the site, and 36.5 to 41 dB(A) at the Fairbanks Village Plaza east of the site.

With the emergency generator running it is estimated that the combined generator and mechanical equipment noise level will be 40.5 to 43 dB(A) at the west property line, 58.5 dB(A) at the south property line, 39 dB(A) at the north property line, and 36.5 to 41 dB(A) at the east property line. At the nearest sensitive receptors it is estimated that the noise level will be 37 dB(A) at the residences north of the project site, 55 dB(A) at the homes south of the project site, 40.5 to 43 dB(A) at the Horizon Center west of the site, and 36.5 to 41 dB(A) at the Fairbanks Village Plaza east of the site.

7.2.5 Combined Facility Noise Levels

Two scenarios have been considered in addressing the combined facility noise levels. These are: (1) a daytime hour with and without the emergency generator running, and (2) a nighttime hour. To provide a "worst case" assessment of project noise levels during the daytime, it has been assumed that

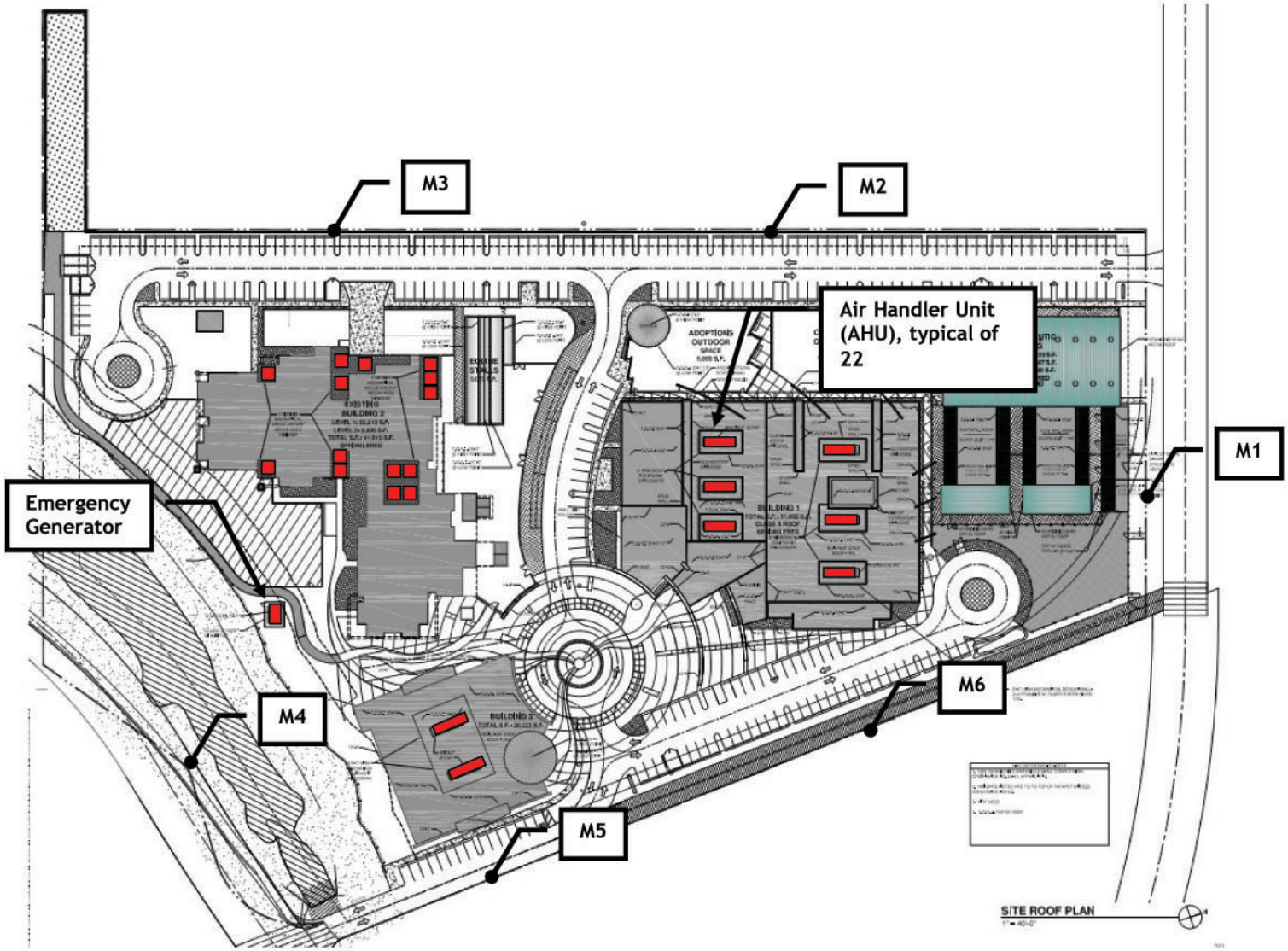


Figure 7-2. Location of Mechanical Equipment and Noise Modeling Locations

all of the stationary sources described in Sections 7.2.2 through 7.2.4 can occur simultaneously. During the nighttime, it has been assumed only that all of the mechanical equipment operates simultaneously. Noise-generating outdoor maintenance activities will not be permitted during the nighttime hours.

The overall 1-hour noise level at any property line is obtained by adding together, on an energy basis, the contributions from the individual sources. This is illustrated in Tables 7-9 and 7-10.

Table 7-9. Analysis of Overall Estimated Facility Noise Levels, Daytime

Noise Source	Estimated Noise Level					
	North Property Line	South Property Line	East PL (Fairbanks Plaza)	West PL (Horizon Center)	Residences to North of Site	Residences to South of Site
Outdoor Activities Fields	43.5 dB(A)	47 dB(A)	45 dB(A)	51 dB(A)	39.5 dB(A)	41 dB(A)
Parking Lot Activities	42.5 dB(A)	36 dB(A)	52.5 dB(A)	56.5 dB(A)	36.5 dB(A)	32.5 dB(A)
Mechanical Equipment						
W/O Generator	39 dB(A)	40 dB(A)	41 dB(A)	43 dB(A)	37 dB(A)	41 dB(A)
W/ Generator	39 dB(A)	58.5 dB(A)	41 dB(A)	43 dB(A)	37 dB(A)	55 dB(A)
Combined						
W/O Generator	47 dB(A)	48 dB(A)	53.5 dB(A)	57.5 dB(A)	42.5 dB(A)	44.5 dB(A)
W/ Generator	47 dB(A)	59 dB(A)	53.5 dB(A)	57.5 dB(A)	42.5 dB(A)	55 dB(A)

Table 7-10. Analysis of Overall Estimated Facility Noise Levels, Nighttime

Noise Source	Estimated Noise Level					
	North Property Line	South Property Line	East PL (Fairbanks Plaza)	West PL (Horizon Center)	Residences to North of Site	Residences to South of Site
Mechanical Equipment						
W/O Generator	39 dB(A)	40 dB(A)	41 dB(A)	43 dB(A)	37 dB(A)	41 dB(A)
W/ Generator	39 dB(A)	58.5 dB(A)	41 dB(A)	43 dB(A)	37 dB(A)	55 dB(A)
Combined						
W/O Generator	39 dB(A)	40 dB(A)	41 dB(A)	43 dB(A)	37 dB(A)	41 dB(A)
W/ Generator	39 dB(A)	58.5 dB(A)	41 dB(A)	43 dB(A)	37 dB(A)	55 dB(A)

Referring to Table 7-9, it is estimated that the County's daytime noise ordinance standard will be exceeded at the Center's west property line. This will be the case with or without the emergency generator running. At the south property line the County's daytime noise ordinance standard will only be exceeded if the emergency generator is running. At the north at east property lines the County's daytime noise ordinance standard will not be exceeded regardless of whether the emergency generator is running. As indicated in Table 7-10, it is estimated that the County's nighttime standard will not be exceeded at the property lines. This will be the case without the emergency generator running. When the emergency generator is running, the County's nighttime standard will be exceeded only at the south property line.

The estimated CNEL that will be experienced at the nearest noise-sensitive areas is calculated by assuming that the daytime noise levels identified in Table 7-9 will occur between 7:00 a.m. and 7:00 p.m. (when the Center is open) and that the nighttime levels of Table 7-10 will occur between 7:00 p.m. and 7:00 a.m. (when the Center is closed). As a result, the estimated CNEL due to project operations (without the emergency generator) will be 44.5 dB at the residences to the north, 48 dB at the residences to the south, and 55.5 dB at the Horizon Center to the west. The CNEL at these sensitive areas complies with the County's Noise Element standard of 60 dB. Further analysis indicates that if the emergency generator runs continuously throughout the entire daytime and evening hours (7:00 a.m. to 10:00 p.m.), or for no more than seven hours during the nighttime hours (10:00 p.m. to 7:00 a.m.) the CNEL at the residences to the south will comply with the County's Noise Element standard of 60 dB. Operation of the emergency generator will not increase the CNEL at either the residences to the north or the Horizon Center to the west.

8 Future Noise Environment at the Project Site

For ease of presentation, the discussion of future noise impacts at the Center has been divided into two sections: exterior and interior noise levels.

8.1 Exterior Noise Levels

Using data provided by Linscott, Law & Greenspan Engineers, an analysis was conducted to identify the future traffic noise exposures that will occur at the project site. The results of our analysis are provided in Appendix III. The noise-sensitive properties on the project site include the education department and A.C.E.S. in Building II. (Refer to Figure 2-2 for their locations.) The peak hour noise level is estimated to be 55 dB(A) at the exterior of Building II. The CNEL at the outdoor Education yard is estimated to be 59.5 dB. This complies with the County of San Diego's Noise Element standard of 60 dB for noise-sensitive areas.

8.2 Interior Noise Levels

It has been assumed in this study that standard commercial construction provides about 25 dB of noise reduction with windows and doors closed. Based on this assumption, it is estimated that the interior Leq will be 30 dB(A) at the education department and at A.C.E.S. This is less than the County's standard of 50 dB(A); therefore, the impact is not significant at these locations.

9 Assessment of Impact

Using the criteria established in this study, the following may be concluded regarding the impact of the proposed project:

- The project will result in the exposure of persons to noise levels in excess of standards established in the County of San Diego's Noise Ordinance. This significant impact will occur at the project's west property line during the daytime hours, and at the south property line at any time of day when the emergency generator is running. There will be no significant impact relative to the Noise Element standard at the noise-sensitive areas within the project site or at the noise-sensitive areas near the project site.
- The project will not generate excessive ground-borne vibration or ground-borne noise levels.
- The project will produce a substantial permanent increase in ambient noise levels in the project vicinity above levels existing without the project as a result of activities at the site. Therefore, the impact is significant.
- Construction of the project will not produce a substantial temporary or periodic increase in ambient noise levels in the project vicinity above levels existing without the project. Therefore, the impact is not significant.

10 Mitigation Measures

The following measures shall be included in the project's design in order to mitigate the significant impacts:

10.1 Project Design Considerations

1. The procurement specifications for the project shall indicate that the air handler units at Buildings I and III shall produce a sound power level of 94 dB(A) or less; that the air handler units at Building II shall produce a sound power level of 90.5 dB(A) or less; and that the emergency generator shall produce a sound pressure level of 75 dB(A) or less at a distance of 23 feet.
2. Noise barriers (i.e., walls and/or earthen berms) shall be constructed at the west property line, and at the outdoor activity areas as shown in Figure 10-1. The figure also provides the recommended minimum heights of the barriers. The recommended minimum heights are relative to the elevation of the project site or the adjacent property, whichever is greater. All noise barriers shall be continuous structures, without gaps or gates, and shall be constructed of a material with a minimum surface density of 4 lbs/ft^2. Such materials include concrete block, earthen berm, tempered glass, Plexiglas, acrylic, or any combination of these materials. (It is noted that the minimum thickness required to achieve the necessary 4 lbs/ft^2 will vary depending on the specific material selected.).
3. Concrete block noise barriers shall be constructed around the emergency generator as shown in Figure 10-1. The figure also provides the recommended minimum height of the barriers. The recommended minimum heights are relative to the elevation of the emergency generator pad. The noise barriers shall be continuous structures, without gaps, and shall be lined on the interior with IAC NoiseFoil NF-I-4-PS sound absorptive panels. (Refer to Enclosure 2 for product literature.).

An access door or gate is permitted on the west side of the enclosure, but shall be kept to the minimum size necessary.

4. Walls shall be constructed around the air handlers at Buildings I and III as shown in Figure 10-1. The figure also provides the recommended minimum height of the walls relative to the roof line. All walls shall be continuous structures, without gaps, and shall be constructed of a material with a minimum surface density of 2 lbs/ft^2. It is noted that the minimum thickness required to achieve the necessary 4 lbs/ft^2 will vary depending on the specific material selected.
5. The rooftop air handlers at Building II shall be located in existing equipment wells that are at least 8' high above the roofline.

10.2 On-Going Conditions

6. Loudspeakers shall not be permitted at the Therapeutic Riding Structure except for the use of temporary loudspeakers on one occasion per year with a Special Event Permit issued by the County of San Diego.
7. Noise-generating outdoor activities (such as lawn mowing, loading or unloading supplies, etc.) shall not be permitted before 7:00 a.m. or after 10:00 p.m.
8. Use of outdoor public address systems shall not be permitted.
9. The number of dogs permitted in the outdoor field areas of the project site at the same time shall be minimized.

10.3 Requirements for Project Implementation

10. Demolition and construction activities shall be limited to the hours and days permitted by the County of San Diego.
11. All construction and demolition equipment shall be fitted with properly sized mufflers.
12. Noisy equipment items shall be located as far as practicable from the surrounding residential properties.
13. The recommended noise barriers of Item 2, above, shall be installed prior to site demolition and construction in order to minimize noise impacts at the adjacent properties.

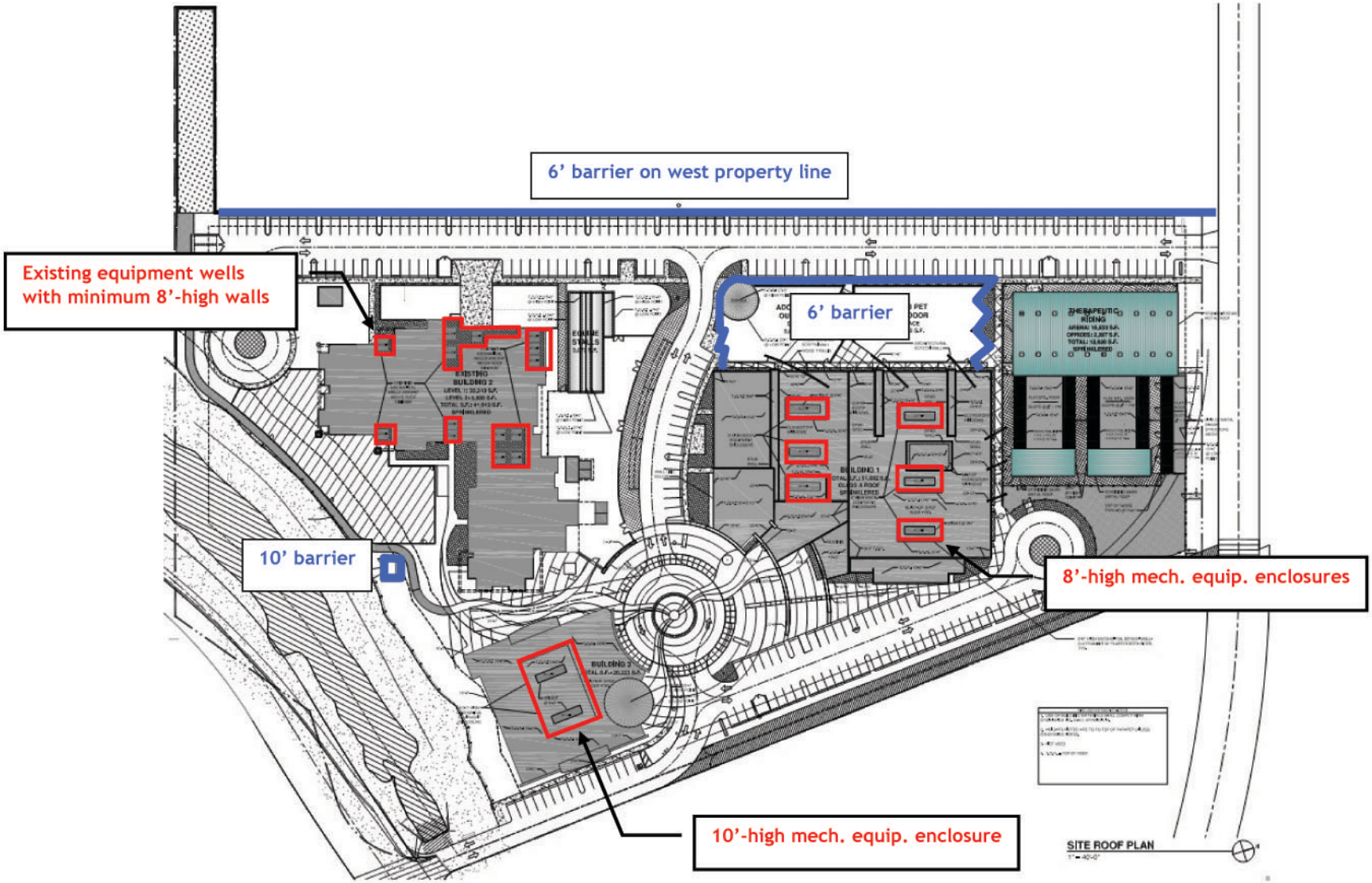


Figure 10-1. Location of Recommended Mitigation Measures

11 Impacts after Mitigation

Using the criteria established in this study, the impact of noise generated by activities at the Center will not be significant at the property lines after the recommended mitigation measures have been applied. This is illustrated in the following tables:

Table 11-1. Analysis of Overall Estimated Facility Noise Levels with Mitigation, Daytime

Noise Source	Estimated Noise Level			
	North Property Line	South Property Line	East PL (Fairbanks Plaza)	West PL (Horizon Center)
Outdoor Activities Fields	43.5 dB(A)	47 dB(A)	45 dB(A)	45.5 dB(A)
Parking Lot Activities	42.5 dB(A)	36 dB(A)	52.5 dB(A)	46 dB(A)
Mechanical Equipment W/O Generator W/ Generator	 39 dB(A) 39 dB(A)	 40 dB(A) 43 dB(A)	 41 dB(A) 41 dB(A)	 43 dB(A) 43 dB(A)
Combined W/O Generator W/ Generator	 47 dB(A) 47 dB(A)	 48 dB(A) 48.5 dB(A)	 53.5 dB(A) 53.5 dB(A)	 50 dB(A) 50 dB(A)

Table 11-2. Analysis of Overall Estimated Facility Noise Levels with Mitigation, Nighttime

Noise Source	Estimated Noise Level			
	North Property Line	South Property Line	East PL (Fairbanks Plaza)	West PL (Horizon Center)
Mechanical Equipment W/O Generator W/ Generator	 39 dB(A) 39 dB(A)	 40 dB(A) 43 dB(A)	 41 dB(A) 41 dB(A)	 43 dB(A) 43 dB(A)
Combined W/O Generator W/ Generator	 39 dB(A) 39 dB(A)	 40 dB(A) 43 dB(A)	 41 dB(A) 41 dB(A)	 43 dB(A) 43 dB(A)

At the Horizon Center, the estimated CNEL will be 51 dB. This complies with the County's standard of 60 dB. At the existing residential properties north and south of the project site the estimated CNEL is less than 60 dB without mitigation (as discussed in Section 7.2.5). With mitigation the CNEL will be even lower. Therefore, the County's noise standards will also be achieved at these locations.

12 References

1. *Project Description.* Tucker Sadler. August 6, 2007.
2. *Traffic Impact Analysis, Helen Woodward Animal Center.* Linscott, Law & Greenspan Engineers. Revised July 3, 2007.
3. *Noise from Construction Equipment and Operations, Building Equipment, and Home Appliances*. U.S. Environmental Protection Agency. December 31, 1971.
4. *Noise Element of the General Plan for the County of San Diego*.
5. *County of San Diego Noise Ordinance*.
6. *Transit Noise and Vibration Assessment*. Harris, Miller, Miller and Hanson, Inc. April 1995.
7. *Information of Levels of Environmental Noise Requisite to Protect Public Health and Welfare with an Adequate Margin of Safety*. U.S. Environmental Protection Agency. March 1974.
8. *Handbook of Acoustical Measurements and Noise Control*. Third Edition. Edited by Cyril Harris.
9. Proposed Site Plan, Floor Plans and Elevations. Tucker Sadler. July 28, 2007.
10. *Acoustical Evaluation for the Proposed Booth Circle Medical Office Building in the City of Irvine*. Wieland Associates, Inc. October 24, 2006.
11. *Site Plan*. Tucker Sadler. November 13, 2007.
12. *Site Roof Plans*. Tucker Sadler. November 13, 2007.

ENCLOSURE 1

Mechanical Equipment Data

McQUAY PACKAGED ROOFTOP UNIT

Date saved : 8/1/2007 9:35:03 AM

JOB NAME	V9H421(RT001)	REP. OFFICE	Climatec - San Diego
JOB DESCRIPTION	MA Engineers Pkg Sound	SALESPERSON	TW
MODEL NUMBER	RPS020C	CUSTOMER	-
UNIT TAGGING	20 Ton	ROOFTOP VERSION	4.51

GENERAL DATA

Unit dimensions (HxWxL ins)	55.5 x 94.0 x 285.5
Unit weight (lbs)	7231
Approval listing	ETL/MEA

CASING DETAILS

Insulation	Nominal 2" thick, 1 ½lb. density fiberglass
Liners	Solid liner throughout
Drain pan	Painted galvanized steel
Doors	Single lever access door on both sides of each air handling section.
Exterior	Beige polyester paint exceeding ASTM B117 salt spray test standard.

ELECTRICAL DATA

Unit voltage (V/Hz/P)	460/60/3
MCA (amps)	66.1
MROPD (amps)	80.0
SCCR (kAIC)	10.0
Field connection	One internal power block
Control box location	Discharge plenum

CONTROL DATA

Temperature controls	DAC - BacNet MSTP comm card
Airflow controls	Two duct static pressure sensor
Auxiliary controls	None
Starting options	Across line

COMPRESSOR DATA

Type / quantity-size	Scroll / 1 - 6.7, 1 - 15
Capacity control	3 Steps
Compressor isolation	Rubber in shear
Compressor kW (Total)	23.6
Compressor amps	1 - 10.9, 1 - 23.7

CONDENSER DATA

Circuits / Rows / FPI	2 / 2 / 16
Fin material	Aluminum
Coil guards	No
Piping options	None
Ambient operation	Std. operation above 45F
Condenser kW (Total)	2.2
Condenser amps (Each)	2.0

COOLING PERFORMANCE	DRAW-THRU	BLOW-THRU
Rows / FPI	5 / 12	
Fin material	Aluminum	
Total capacity (Btu/hr)	290522	
Sensible capacity (Btu/hr)	210124	
Ambient (F)	95.0 / 75.0	
Entering db / wb (F)	80.0 / 67.0	
Leaving db / wb (F)	54.7 / 54.7	
Face area (ft2)	18.5	
Face velocity (ft/min)	411	
Refrigerant type	R22	

ENERGY RECOVERY	**COOLING**	**HEATING**
Ambient air temperatures (F)		
Return air temperatures (F)		
Minimum outside air volume (cfm)		
Minimum exhaust air volume (cfm)		
Wheel leaving air temperature (F)		
Mixed air temperature (F)		
Total effectiveness		
Sensible effectiveness		
Recovered Capacity		
Wheel Depth (ins)		

FAN PERFORMANCE	**SUPPLY**	**RETURN / EXHAUST**
Air volume (cfm)	7600	7600
Altitude (ft)	0	0
Air modulation device	Inverter	Inverter
Fan diameter / type	2 - 15"x15" / FC LP	30" / AF SWSI
Fan speed (rpm)	1206	763
Fan brake horsepower (HP)	5.8	2.3
Motor size (HP)	7.5	7.5
Motor amps	10.8	10.8
Motor efficiency / type	88.5% / High efficiency	88.5% / High efficiency
Drive service factor / type	Std. 115% / Fixed	Std. 115% / Fixed
Fan isolation	Rubber in shear	Rubber in shear
Fan section options	None	None

HEATING PERFORMANCE	
Type of heat	Hot water
Rows / FPI	1 / 9
Valve package	1.25" Three-way valve w/ actuator
Capacity (Btu/hr)	304107
EDB / LDB (F)	60.0 / 96.6
EWT / LWT (F)	180.0 / 155.6
Water flow rate (gpm)	24.9
Water pressure drop (in Ft)	10.3
Air pressure drop (in WC)	0.10
Glycol type / percent	None

AIR BLENDER	
Type	None

FILTER DATA	**DRAW-THRU**	**FINAL**
Filter efficiency / type	30% / Throwaway	
Face area (ft2)	50	
Face velocity (ft/min)	152	
Filter qty / size (ins)	10 / 16.0 x 20.0 x 2.0 10 / 16.0 x 25.0 x 2.0	
Energy recovery wheel filter qty/size	None	

PLENUM DATA	**RETURN**	**DISCHARGE**
Outside air option	Economizer w/ actuator	-
Opening location	Bottom	Bottom
Plenum options	None	None
Smoke detector	No	No

BLANK ACCESS	**DRAW-THRU**	**SPACER**	**BLOW-THRU**

Section length (ins) 40

AIR PRESSURE DROPS (in WC)	SUPPLY	RETURN
External static pressure	2.00	1.00
Draw-thru filter	0.06	
Cooling	0.59	
Heating	0.10	
Total static	2.80	1.00

UNIT SOUND Standard condenser fan

	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Radiated	-	91	88	88	85	82	81	80
Unit discharge	83	76	70	67	66	59	52	45
Unit return	86	81	78	75	76	70	63	57

SHIPPING SECTION DETAILS	LENGTH	WEIGHT
Section 1	285.5	7231

WARRANTY	PARTS	COMPRESSOR	HEAT EXCHANGER
Standard (yrs)	1	1	None
Extended (yrs)	None	None	None

NOTES

As a standalone component, unit meets or exceeds requirements of ASHRAE 90.1 - 1999. The approving authority is responsible for compliance of multi-component building systems.

McQUAY PACKAGED ROOFTOP UNIT

Date saved : 8/1/2007 9:36:07 AM

JOB NAME	V9H421(RT000)	REP. OFFICE	Climatec - San Diego
JOB DESCRIPTION	MA Engineers Pkg Sound	SALESPERSON	TW
MODEL NUMBER	RPS050C	CUSTOMER	-
UNIT TAGGING	50 Ton	ROOFTOP VERSION	4.51

GENERAL DATA

Unit dimensions (HxWxL ins)	73.0 x 99.0 x 419.0
Unit weight (lbs)	12005
Approval listing	ETL/MEA

CASING DETAILS

Insulation	Nominal 2" thick, 1 ½lb. density fiberglass
Liners	Solid liner throughout
Drain pan	Painted galvanized steel
Doors	Single lever access door on both sides of each air handling section.
Exterior	Beige polyester paint exceeding ASTM B117 salt spray test standard.

ELECTRICAL DATA

Unit voltage (V/Hz/P)	460/60/3
MCA (amps)	144.8
MROPD (amps)	175.0
SCCR (kAIC)	10.0
Field connection	One internal power block
Control box location	Discharge plenum

CONTROL DATA

Temperature controls	DAC - BacNet MSTP comm card
Airflow controls	Two duct static pressure sensor
Auxiliary controls	None
Starting options	Across line

COMPRESSOR DATA

Type / quantity-size	Scroll / 4 - 13
Capacity control	4 Steps
Compressor isolation	Rubber in shear
Compressor kW (Total)	55.9
Compressor amps	4 - 21.8

CONDENSER DATA

Circuits / Rows / FPI	2 / 2 / 16
Fin material	Aluminum
Coil guards	No
Piping options	None
Ambient operation	Std. operation above 45F
Condenser kW (Total)	4.3
Condenser amps (Each)	2.0

COOLING PERFORMANCE	DRAW-THRU	BLOW-THRU
Rows / FPI		5 / 12
Fin material		Aluminum
Total capacity (Btu/hr)		649596
Sensible capacity (Btu/hr)		494268
Ambient (F)		95.0 / 75.0
Entering db / wb (F)		80.0 / 67.0
Leaving db / wb (F)		56.2 / 56.1
Face area (ft2)		39.5
Face velocity (ft/min)		481
Refrigerant type		R22

ENERGY RECOVERY	**COOLING**	**HEATING**
Ambient air temperatures (F)		
Return air temperatures (F)		
Minimum outside air volume (cfm)		
Minimum exhaust air volume (cfm)		
Wheel leaving air temperature (F)		
Mixed air temperature (F)		
Total effectiveness		
Sensible effectiveness		
Recovered Capacity		
Wheel Depth (ins)		

FAN PERFORMANCE	**SUPPLY**	**RETURN / EXHAUST**
Air volume (cfm)	19000	19000
Altitude (ft)	0	0
Air modulation device	Inverter	Inverter
Fan diameter / type	27" / FC LP	40" / AF SWSI
Fan speed (rpm)	743	673
Fan brake horsepower (HP)	18.6	5.9
Motor size (HP)	25.0	7.5
Motor amps	31.0	10.8
Motor efficiency / type	91.7% / High efficiency	88.5% / High efficiency
Drive service factor / type	Std. 115% / Fixed	Std. 115% / Fixed
Fan isolation	Rubber in shear	Rubber in shear
Fan section options	None	None

HEATING PERFORMANCE	
Type of heat	Hot water
Rows / FPI	1 / 9
Valve package	1.25" Three-way valve w/ actuator
Capacity (Btu/hr)	631777
EDB / LDB (F)	60.0 / 90.4
EWT / LWT (F)	180.0 / 159.7
Water flow rate (gpm)	62.3
Water pressure drop (in Ft)	56.0
Air pressure drop (in WC)	0.24
Glycol type / percent	None

AIR BLENDER	
Type	None

FILTER DATA	**DRAW-THRU**	**FINAL**
Filter efficiency / type	30% / Throwaway	
Face area (ft2)	74	
Face velocity (ft/min)	257	
Filter qty / size (ins)	7 / 16.0 x 20.0 x 2.0 21 / 16.0 x 25.0 x 2.0	
Energy recovery wheel filter qty/size	None	

PLENUM DATA	**RETURN**	**DISCHARGE**
Outside air option	Economizer w/ actuator	-
Opening location	Bottom	Bottom
Plenum options	None	None
Smoke detector	No	No

BLANK ACCESS	**DRAW-THRU**	**SPACER**	**BLOW-THRU**

Section length (ins)	48

AIR PRESSURE DROPS (in WC)	**SUPPLY**	**RETURN**
External static pressure	2.00	1.00
Draw-thru filter	0.13	
Cooling	0.74	
Heating	0.24	
Total static	3.42	1.00

UNIT SOUND Standard condenser fan

	63 Hz	125 Hz	250 Hz	500 Hz	1000 Hz	2000 Hz	4000 Hz	8000 Hz
Radiated	-	94	92	91	88	86	85	83
Unit discharge	91	84	78	75	74	67	60	53
Unit return	94	88	85	82	83	77	70	64

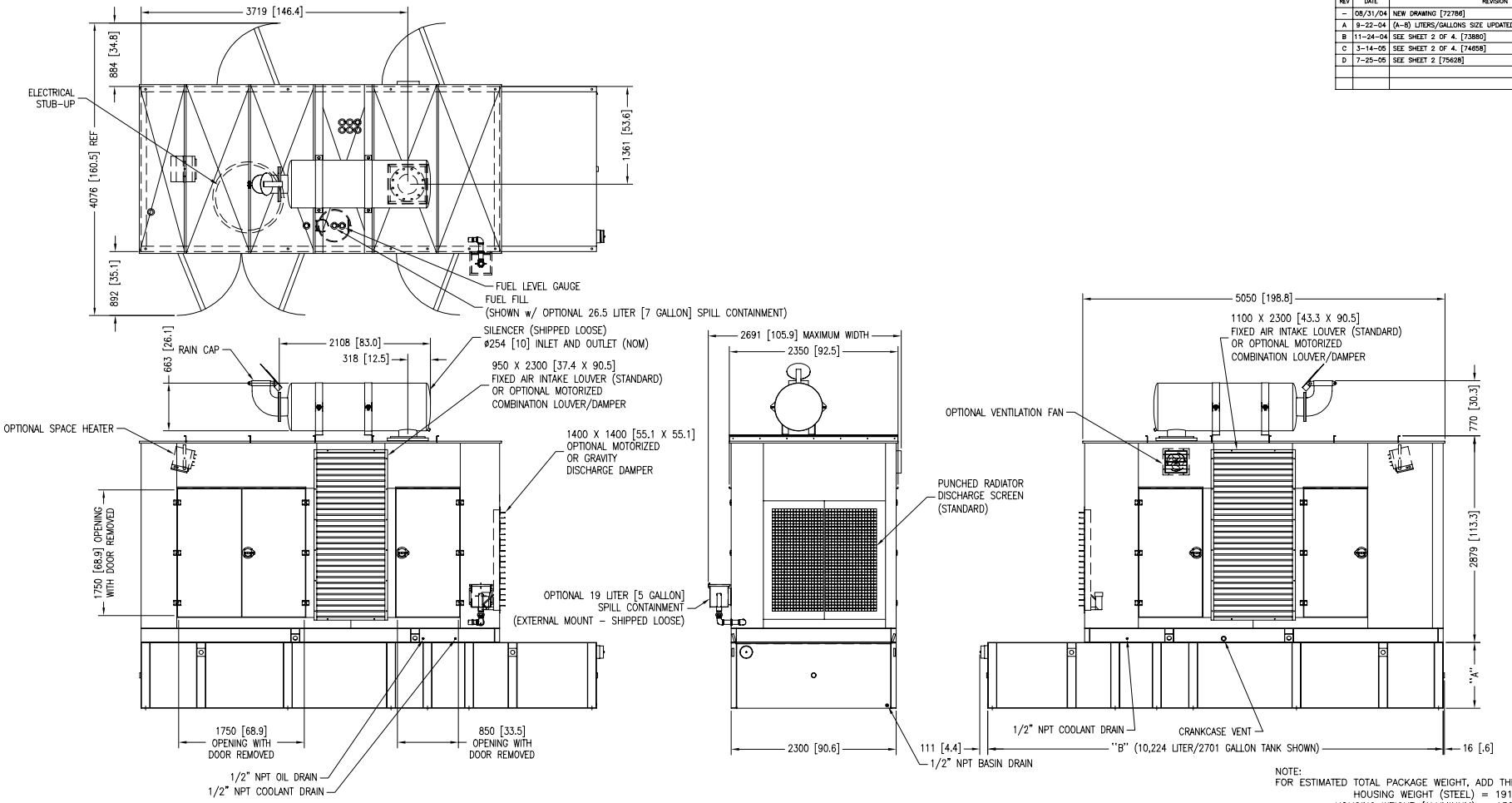
SHIPPING SECTION DETAILS	**LENGTH**	**WEIGHT**
Section 1	419.0	12005

WARRANTY	**PARTS**	**COMPRESSOR**	**HEAT EXCHANGER**
Standard (yrs)	1	1	None
Extended (yrs)	None	None	None

NOTES

As a standalone component, unit meets or exceeds requirements of ASHRAE 90.1 - 1999. The approving authority is responsible for compliance of multi-component building systems.

REV	DATE	REVISION	BY
–	08/31/04	NEW DRAWING [72786]	DCS
A	9-22-04	(A-B) LITERS/GALLONS SIZE UPDATED [73398]	SAM
B	11-24-04	SEE SHEET 2 OF 4. [73880]	RAC
C	3-14-05	SEE SHEET 2 OF 4. [74858]	RLD
D	7-25-05	SEE SHEET 2 [75628]	SAM



NOTE:
FOR ESTIMATED TOTAL PACKAGE WEIGHT, ADD THE FOLLOWING ITEMS:
HOUSING WEIGHT (STEEL) = 1910 KG [4200 LBS]
HOUSING WEIGHT (ALUMINUM) = 1307 KG [2875 LBS]
APPROXIMATE GENSET WEIGHT (WET) = KG [LBS]
(SEE GENSET INFORMATION CHART)
TANK WEIGHT (DRY) = KG [LBS]
(SEE TANK INFORMATION CHART)
SILENCER WEIGHT = 163 KG [360 LBS]
ESTIMATED TOTAL WEIGHT =

METRIC CAD FILE

NOTE: DIMENSIONS IN [ ] ARE ENGLISH EQUIVALENTS.

TANK INFORMATION			
LITERS\[GALLONS]\HOURS	"A" DIM	"B" DIM	TANK WEIGHT (DRY)
NO TANK	0	0	0
1696 [448] 12 HRS	305 [12]	5000 [197]	1775 [3904]
3399 [898] 24 HRS	457 [18]		2111 [4645]
5042 [1332] 36 HRS	610 [24]		2334 [5134]
6791 [1794] 48 HRS	914 [36]		2593 [5704]
10,224 [2701] 72 HRS		6350 [250]	3315 [7294]

GENSET INFORMATION	
MODEL	GENSET WEIGHT (WET)
450 & 500 (5M4024 ALT)	3193 Kg [7025 LBS]
450 & 500 (5M4027, 4028, 4030, 4162, 4270, 4272 ALT)	3366 Kg [7405 LBS]
450 & 500 (5M4032, 4164 ALT)	3498 Kg [7695 LBS]

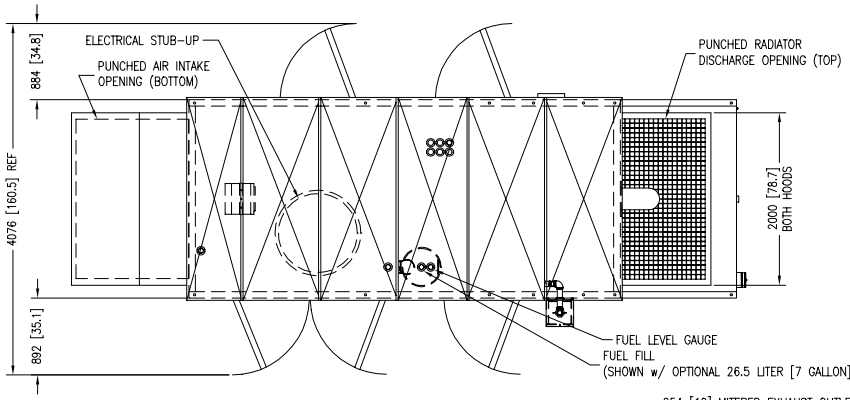
450REOZVB MODEL D450 16.1A65
500REOZVB MODEL D500 16.1A65
WEATHER ENCLOSURE WITH SUB BASE TANK OPTION

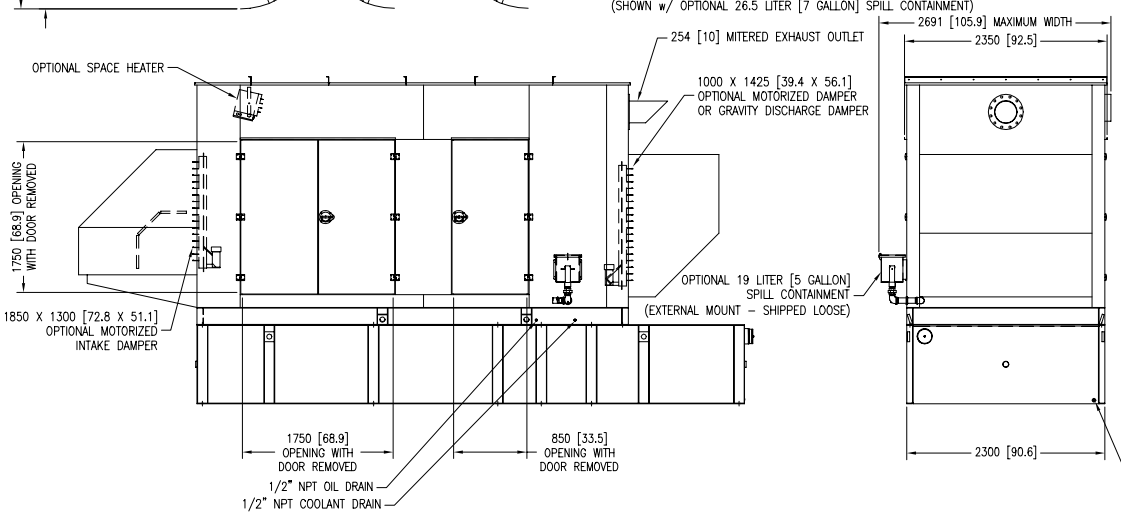
UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ±
X.X ±
X ±
ANGLES ±
SURFACE FINISH MAX.
THIRD ANGLE PROJECTION

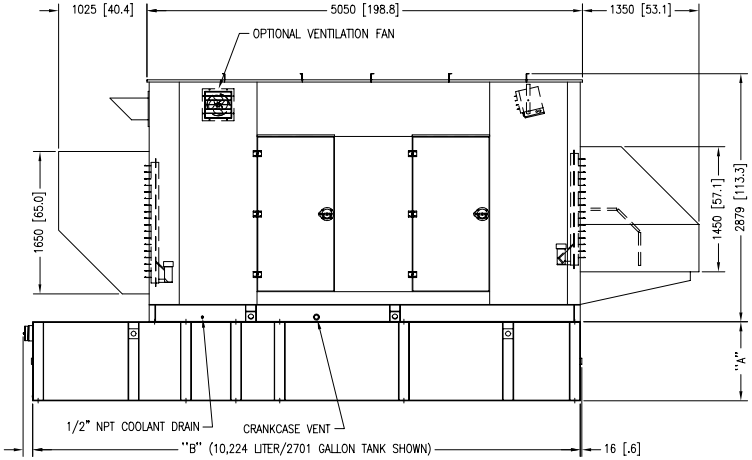
APPROVALS		DATE
DRAWN	DCS	08/31/04
CHECKED	EB	9-9-04
APPROVED	SLJ	9-9-04

TITLE: DIMENSION PRINT
SCALE .0391 XP | CAD NO. ADV7007A.DWG | SHEET 1–4
DWG. NO. ADV–7007 | D
PLOTTED DATE

REV	DATE	REVISION	BY
–	08/31/04	NEW DRAWING [72786]	DCS
A	9-22-04	(A–B) LITERS/GALLON SIZE UPDATED [73398]	SAM
B	11-24-04	(C–1,3) DIMS 1450 & 1650 ADDED. [73880]	RAC
C	3-14-05	(C–5) 1425 X 1000 [56.1 X 39.4] WAS 1400 X 1400 [55.1 X 55.1] [74658]	RLD
D	7-25-05	(C–5) 1000 X 1425 WAS 1425 X 1000 [75628]	SAM







NOTE:
FOR ESTIMATED TOTAL PACKAGE WEIGHT, ADD THE FOLLOWING ITEMS:

HOUSING WEIGHT (STEEL) = 2273 KG [5000 LBS]
HOUSING WEIGHT (ALUMINUM) = 1568 KG [3450 LBS]
APPROXIMATE GENSET WEIGHT (WET)(SEE GENSET INFORMATION CHART) = KG [LBS]
TANK WEIGHT (DRY) (SEE TANK INFORMATION CHART) = KG [LBS]

ESTIMATED TOTAL WEIGHT =

METRIC CAD FILE

NOTE: DIMENSIONS IN [ ] ARE ENGLISH EQUIVALENTS.

TANK INFORMATION			
LITERS\[GALLONS]\HOURS	"A" DIM	"B" DIM	TANK WEIGHT (DRY)
NO TANK	0	0	0
1696 [448] 12 HRS	305 [12]	5000 [197]	1775 [3904]
3399 [898] 24 HRS	457 [18]		2111 [4645]
5042 [1332] 36 HRS	610 [24]		2334 [5134]
6791 [1794] 48 HRS	914 [36]		2593 [5704]
10,224 [2701] 72 HRS		6350 [250]	3315 [7294]

GENSET INFORMATION	
MODEL	GENSET WEIGHT (WET)
450 & 500 (5M4024 ALT)	3193 Kg [7025 LBS]
450 & 500 (5M4027, 4028, 4030, 4162, 4270, 4272 ALT)	3366 Kg [7405 LBS]
450 & 500 (5M4032, 4164 ALT)	3498 Kg [7695 LBS]

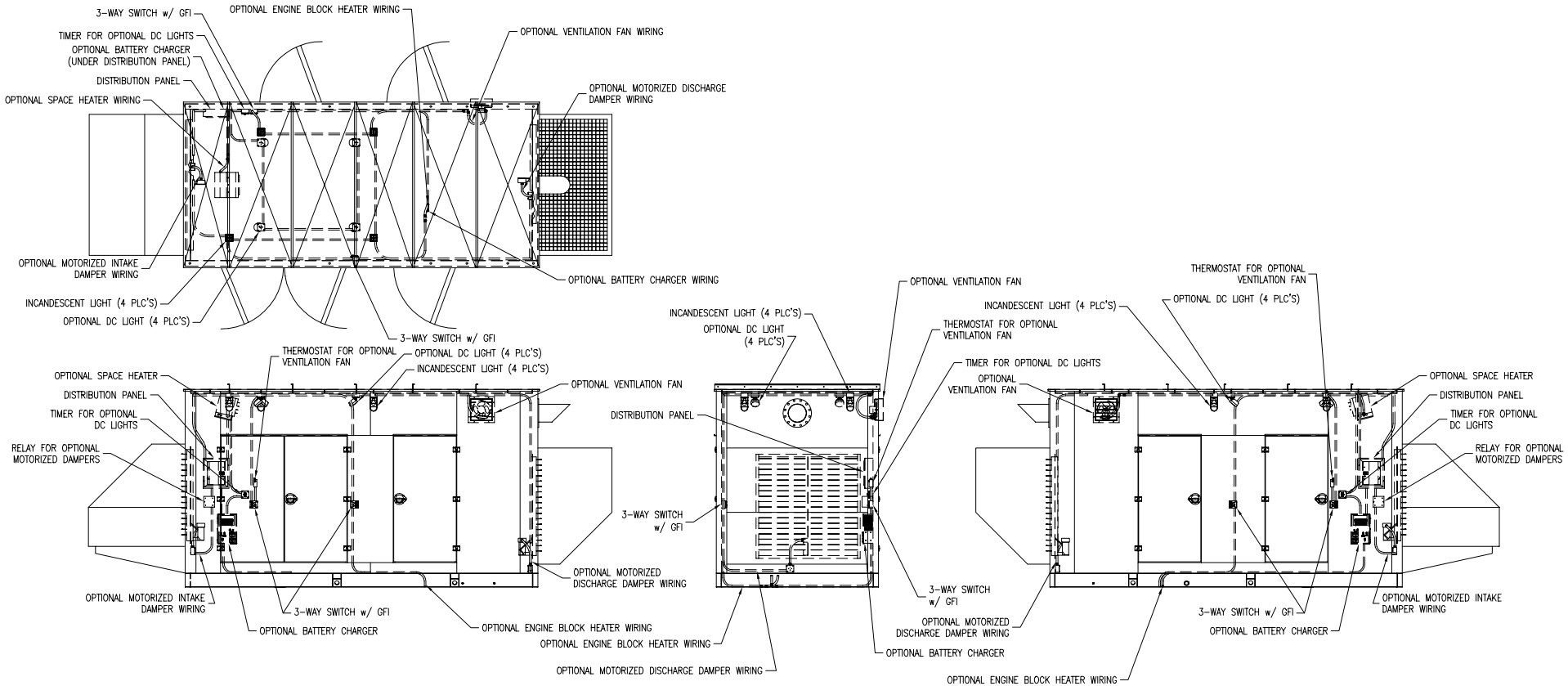
450REOZVB MODEL D450 16.1A65
500REOZVB MODEL D500 16.1A65
SOUND ENCLOSURE WITH SUB BASE TANK OPTION

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
.XXX ±
.XX ±
X ±
ANGLES ±
SURFACE FINISH MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	DCS	08/31/04
CHECKED	EB	9-9-04
APPROVED	SLJ	9-9-04

TITLE: DIMENSION PRINT
SCALE .0391 XP | CAD NO. ADV7007B.DWG | SHEET 2–4
DWG. NO. ADV–7007 | D
PLOTTED DATE

REV	DATE	REVISION	BY
–	08/31/04	NEW DRAWING [72786]	DCS
A	9-22-04	SEE SHEET 1 [73398]	SAM
B	11-24-04	SEE SHEET 2 OF 4. [73880]	RAC
C	3-14-05	SEE SHEET 2 OF 4. [74658]	RLD
D	7-25-05	SEE SHEET 2 [75628]	SAM



METRIC CAD FILE

NOTE: DIMENSIONS IN [ ] ARE ENGLISH EQUIVALENTS.

450REOZVB MODEL D450 16.1A65
500REOZVB MODEL D500 16.1A65
ENCLOSURE ELECTRICAL OPTIONS LAYOUT

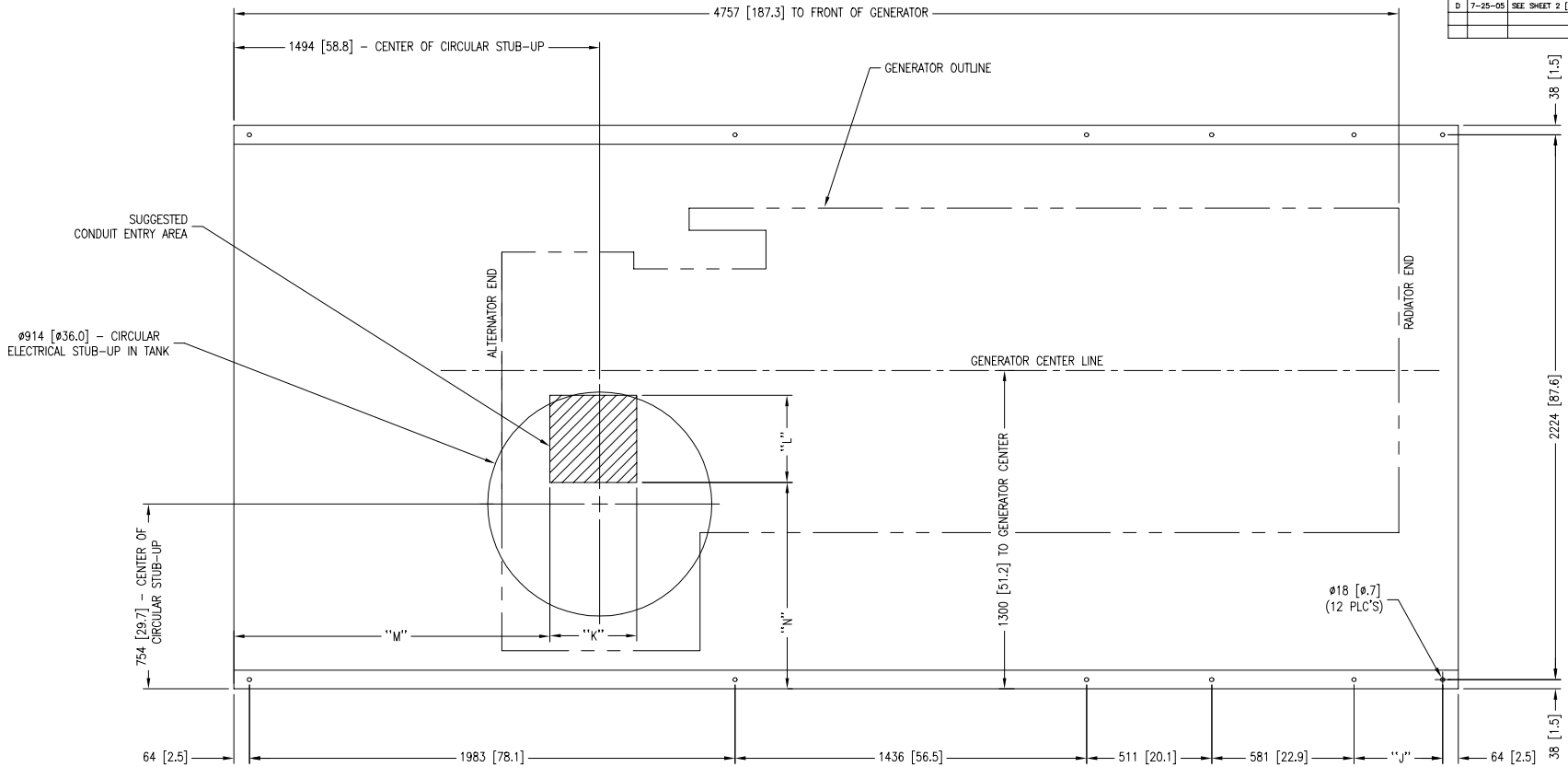
UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ±
X.X ±
X ±
ANGLES ±
SURFACE FINISH MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	DCS	08/31/04
CHECKED	EB	9-9-04
APPROVED	SLJ	9-9-04

TITLE: DIMENSION PRINT

SCALE .0391 XP | CAD NO. ADV7007C.DWG | SHEET 3-4
DWG. NO. ADV-7007 | D
PLOTTED DATE

REV	DATE	REVISION	BY
–	08/31/04	NEW DRAWING [72786]	DCS
A	9-22-04	(A-B) LITERS/GALLONS SIZE UPDATED [73398]	SAM
B	11-24-04	SEE SHEET 2 OF 4. [73880]	RAC
C	3-14-05	SEE SHEET 2 OF 4. [74658]	RLD
D	7-25-05	SEE SHEET 2 [75628]	SAM



TANK INFORMATION	
LITERS\[GALLONS]\HOURS	"J" DIM
NO TANK	362 [14.26]
1696 [448] 12 HRS	
3399 [898] 24 HRS	
5042 [1332] 36 HRS	
6791 [1794] 48 HRS	
10,224 [2701] 72 HRS	1712 [67.41]

CONDUIT ENTRY SIZING INFORMATION		
DEVICE	"K"	"L"
JUNCTION BOX	355 [13.98]	355 [13.98]
400–1200 AMP BREAKER	435 [17.12]	261 [10.28]
1400–2500 AMP BREAKER & UL SQUARE D 1200 AMP w/ GFI	420 [16.55]	597 [23.50]
EXTENSION BOX	435 [17.12]	640 [25.19]

CONDUIT ENTRY LOCATION INFORMATION				
DEVICE	5M4024,4027,4028,4030,4162,4270,4272		5M4032,4164	
	"M"	"N"	"M"	"N"
JUNCTION BOX	1291 [50.83]	843 [33.19]	1126 [44.34]	843 [33.19]
400–1200 AMP BREAKER	1272 [50.09]	528 [20.79]	1107 [43.59]	528 [20.79]
1400–2500 AMP BREAKER & UL SQUARE D 1200 AMP w/ GFI	1307 [51.46]	186 [7.32]	1142 [44.97]	186 [7.32]
EXTENSION BOX	1291 [50.83]	164 [6.46]	1126 [44.34]	164 [6.46]

METRIC CAD FILE

NOTE: DIMENSIONS IN [ ] ARE ENGLISH EQUIVALENTS.

450REOZVB MODEL D450 16.1A65
500REOZVB MODEL D500 16.1A65
SUB BASE TANK & MOUNTING FRAME BOLTING LAYOUT

UNLESS OTHERWISE SPECIFIED –
1) DIMENSIONS ARE IN MILLIMETERS
2) TOLERANCES ARE:
X.XX ±
X.X ±
X ±
ANGLES ±
SURFACE FINISH MAX.
THIRD ANGLE PROJECTION

APPROVALS		DATE
DRAWN	DCS	08/31/04
CHECKED	EB	9-9-04
APPROVED	SLJ	9-9-04

TITLE: DIMENSION PRINT

SCALE: 1205 XP | CAD NO.: ADV7007D.DWG | SHEET: 4–4
DWG. NO.: ADV–7007 | D
PLOTTED DATE:

ENCLOSURE 2

Product Literature

BULLETIN 6.0183.2

iac ARCHITECTURAL NOISE-FOIL™

SOUND ABSORPTION SYSTEMS FOR INDUSTRY AND COMMERCE

NOISE REDUCTION IN HIGH NOISE LEVEL AREAS • ACOUSTICAL CONDITIONING thru REVERBERATION CONTROL

IDEAL FOR:

- POWER PLANTS
- PRINTING PLANTS
- AUDITORIUMS
- TEXTILE PLANTS
- GYMNASIUMS
- CONVENTION CENTERS
- PRESS SHOPS
- MACHINE SHOPS
- CONCERT HALLS
- SHEET METAL SHOPS
- STRUCTURAL SHOPS
- RESTAURANTS
- HOUSES OF WORSHIP
- PLATE FABRICATION SHOPS
- TANK FABRICATION SHOPS
- ENGINE TEST FACILITIES
- SCHOOLS, THEATERS
- PLASMA SPRAY SHOPS
- CORRECTIONAL FACILITIES
- BROADCASTING/RECORDING STUDIOS
- TRANSIT SYSTEMS
- ANY LOCATION REQUIRING NOISE REDUCTIONS UP TO 10 dBA
- ACOUSTICALLY UPGRADING CONCRETE, STUD, OR SHEETROCK ENCLOSURES

FEATURES:

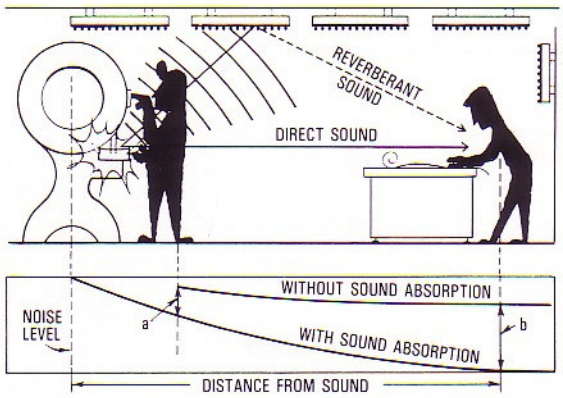
- CONSTRUCTION: ABUSE RESISTANT METAL JACKETED
- HIGH SOUND ABSORPTION: NRC 0.95
- THERMAL INSULATION: LOW HEAT TRANSFER COEFFICIENTS
- ATTRACTIVE FINISH OPTIONS: VINYL – TEDLAR – POLYESTER PAINTS POWDER COATINGS
- INCOMBUSTIBLE: CLASS A-FIRE RESISTANT MATERIALS
- READILY INSTALLED: FLUSH AND AIRSPACE MOUNTED ON WALLS AND CEILINGS. VERTICALLY SUSPENDED FROM ROOFS AND CEILINGS.

U.S. ARMY CORPS OF ENGINEERS' HYDRO-ELECTRIC POWER PLANT, CARTERS LAKE, GEORGIA

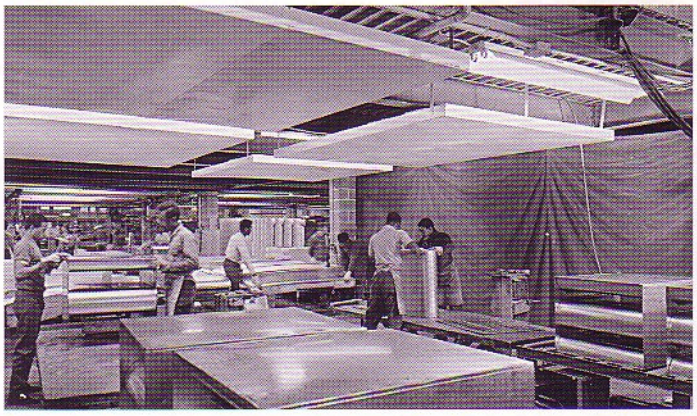
INDUSTRIAL ACOUSTICS COMPANY

How Sound-Absorbing Panels Reduce Plant Noise Levels

Noise-Foil™ Sound Absorbing Modules are practical and effective for reducing high noise levels in industrial and commercial facilities. Although providing little noise reduction near noise sources, Noise-Foil will benefit workers further away.



Operators at **a** – not helped; personnel at **b** – benefit from reduced noise levels as reflected sound is absorbed 'en route'. Risk of hearing loss is reduced and speech intelligibility is improved. Noise reduction of 3 to 5 dB is typical; as much as 8 to 10 dB in highly reverberant areas.

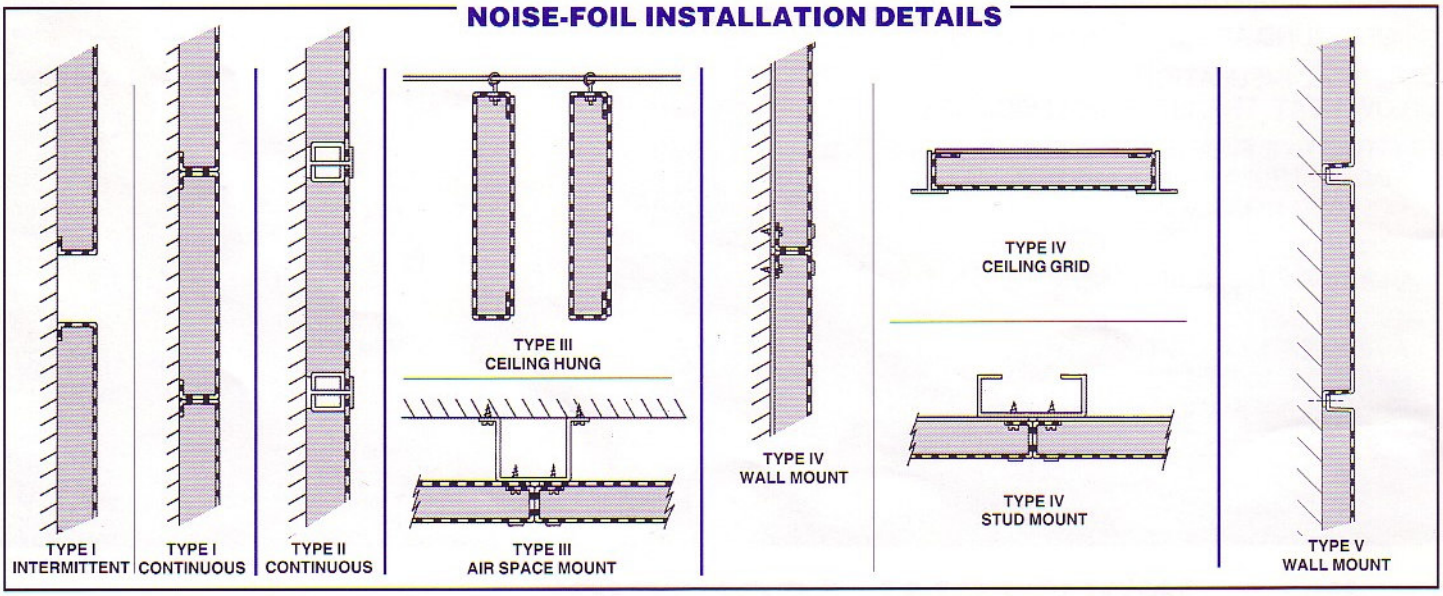


Noise-Foil Sound Absorption Panel Systems reduce reflected noise and provide acoustical conditioning for large and small spaces. Can be attached to walls or suspended from ceiling.

NOISE-FOIL PANEL TYPES

TYPE	ACOUSTIC RATINGS	DESCRIPTION	APPLICATIONS
NF-I	NRC 0.70 to 1.30 ASTM C 423-84a	Open back – non-welded construction Face sheet fully perforated Max width 14" (356mm) – 2" (51mm) thick 18" (457mm) – 4" (102mm) thick Available in pre-finished materials, steel & aluminum	Wall mount No air space No joiners required
NF-II	NRC 0.70 to 1.30 ASTM C 423-84a	Open back – welded steel construction Face sheet fully perforated Max width 48" (1219mm) – 4" (102mm) thick Available in a variety of paint finishes (after fabrication).	Wall mount No air space Joiners or trim required
NF-III	NRC 0.70 to 1.30 ASTM C 423-84a (Apply to total panel surface area, ie, both sides)	Fully perforated – front and back – non-welded construction Max width 42" x 66" x 2" thick (1067 x 1676 x 51mm) 38" x 62" x 4" thick (965 x 1575 x 102mm) Available in pre-finished materials, steel & aluminum	Ceiling hung Wall mount with air space
NF-IV	NRC 0.95 – ASTM C 423-84a STC 33 – AMA two room method ASTM E 413	Closed back panel Max width 42" x 66" x 2" thick (1067 x 1676 x 51mm) 38" x 62" x 4" thick (965 x 1575 x 102mm) Available in pre-finished materials, steel & aluminum	Wall, stud, and ceiling grid
NF-V	NRC 1.00 ASTM C 423-84a	Open back Face sheet margined perforations Max width 24" (610mm) – 2½" (64mm) thick Available in pre-finished materials, galvanized steel & aluminum. Accelerated Weather Tested – 4000 hr/ASTM B 117 2400 hr/ASTM G 23	Wall mount Ideal for outdoor applications No air space No joiners required

NOISE-FOIL INSTALLATION DETAILS



Noise-Foil™ Sound Absorption Systems – Design Guidelines

TABLE 1 – CONTINUOUS, WALL-MOUNTED TYPES I, II, III, and V SOUND ABSORPTION COEFFICIENTS

Fill Protection Option	1/3 Octave Band Center Frequency, Hz						
	125	250	500	1K	2K	4K	NRC
4" (102mm) Thick							
–N	0.97	1.39	1.34	1.29	1.19	1.01	1.30
–P	0.86	0.89	0.93	0.89	0.84	0.77	0.90
–PS	0.57	0.60	1.01	1.06	0.99	0.86	0.90
2 1/2" (64mm) Thick TYPE V							
–N	0.24	0.95	1.13	0.99	0.94	0.86	1.00
2" (51mm) Thick							
–N	0.35	0.65	1.20	1.21	1.07	0.92	1.00
–P	0.41	0.47	0.64	0.79	0.85	0.72	0.70
–PS	0.39	0.48	0.71	1.01	0.93	0.77	0.80

NOTE: Coefficients greater than 1.0 result from diffraction effects associated with limited sample size (ASTM C 423, 72 ft² – 6.69m²). For most applications a maximum coefficient of 0.95 is recommended for noise reduction calculations.

TABLE 2 – INTERMITTENT, WALL-MOUNTED TYPES I, II, III, and IV TOTAL ABSORPTION, SABINS/ARRAY

Fill Protection Option	Spacing in. (mm)	1/3 Octave Band Center Frequency, Hz					
		125	250	500	1K	2K	4K
4" (102mm) Thick 6 Panels 14" x 120" (356 x 3048mm). Total area 70 ft² (6.5m²)							
–N	3 (76)	66	111	110	98	95	84
	14 (356)	81	116	140	117	112	100
–P	3 (76)	67	74	88	70	66	75
	14 (356)	75	71	91	92	77	67
–PS	3 (76)	47	56	94	85	85	58
	14 (356)	63	52	102	105	94	67
2" (51mm) Thick 5 Panels 18" x 120" (457 x 3048mm). Total area 75 ft² (7m²)							
–N	3 (76)	24	48	98	98	88	75
	18 (457)	25	58	112	114	107	82
–P	3 (76)	25	42	54	64	60	65
	18 (457)	32	32	50	61	66	63
–PS	3 (76)	37	38	54	80	72	65
	18 (457)	36	32	58	86	82	63

TABLE 3 – CEILING-HUNG TYPE III TOTAL ABSORPTION, SABINS/PANEL

Fill Protection Option	Spacing in. (mm)	1/3 Octave Band Center Frequency, Hz					
		125	250	500	1K	2K	4K
2 in. (51mm) Thick 42 in. x 66 in. (1067 x 1676mm)							
–N	14 (356)	6	10	12	10	12	9
	32 (813)	6	11	16	16	20	14
	42 (1067)	6	12	18	18	25	17
	63 (1600)	6	13	23	25	31	19
–P	14 (356)	6	12	12	12	12	7
	32 (813)	6	13	16	18	20	12
	42 (1067)	6	15	18	20	25	14
	63 (1600)	6	15	23	27	30	16
–PS	14 (356)	5	12	11	12	13	8
	32 (813)	5	14	15	19	21	12
	42 (1067)	5	16	17	22	27	15
	63 (1600)	5	16	22	30	32	17
4 in. (102mm) Thick 38 in. x 62 in. (965 x 1575mm)							
–N	13 (330)	5	11	13	12	13	8
	29 (737)	5	12	18	19	21	12
	38 (965)	5	14	21	21	27	15
	57 (1448)	5	15	26	29	32	17
–P	13 (330)	7	10	12	11	11	7
	29 (737)	7	11	16	17	18	11
	38 (965)	7	13	19	19	23	14
	57 (1448)	7	13	24	26	27	16
–PS	13 (330)	6	10	13	12	11	8
	29 (737)	6	12	18	19	19	11
	38 (965)	6	13	21	22	24	13
	57 (1448)	6	14	26	30	28	16

Sound Absorption is Affected by Panel-Module Placement as demonstrated in the IAC NVLAP-accredited Aero-Acoustic Laboratory.

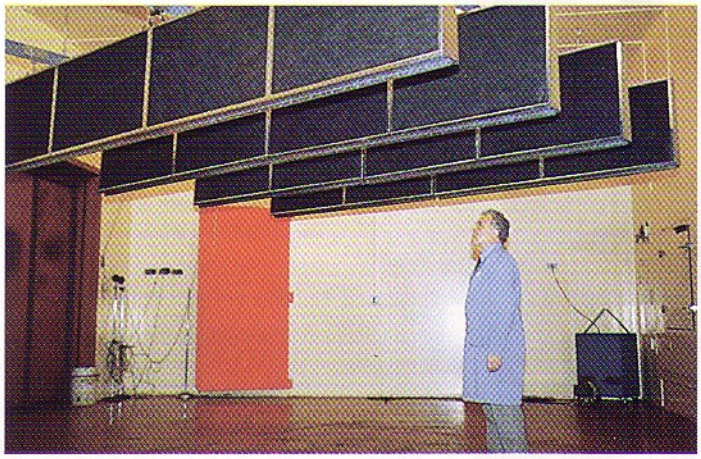
Ceiling-Hung Panels were tested in several configurations as per ASTM C 423. Sound absorption per sq ft of panel area improved with increased spacing. In the Speech Frequencies, 500, 1000, and 2000 Hz, a 63 in. (1600mm) panel spacing provides highest number of Sabins per module (Sabin or Metric Sabin is the equivalent of 1 sq ft or 1sq m respectively of a perfectly sound absorptive surface).

However, increased spacing reduces total number of panels that can be fitted and sound absorptive Sabins that can be provided. Cost-effective applications can be maximized by considering ceiling-hung and/or ceiling/wall-mounted configurations.

Wall/Ceiling-Mounted Noise-Foil Modules can be very effective in long narrow spaces and relatively low ceilings. See Table 1 for sound absorption coefficients in continuous and Table 2 for Sabins per array in intermittent installations; Table 3 gives Sabins per module for ceiling-hung arrangements.

Ceiling-Hung Noise-Foil Type III Modules can be used to great advantage where there are large floor areas with widely spaced walls. For cost-effective recommendations please check with IAC.

Noise-Foil Testing in IAC Aero-Acoustic Laboratory



HOW TO DESIGNATE NOISE-FOIL PANELS

NF –1 –2 –PS

TYPE

THICKNESS

FILL PROTECTION OPTION

CODE FOR FILL PROTECTION OPTIONS

N –No fill protection

P –All wrapped in polyethylene

PS –Fill wrapped and set back by acoustic spacer

Specifications for Noise-Foil™ Sound Absorption Systems

1.0 GENERAL

1.1 Scope of Work — This Section covers the furnishing of materials and products for the fabrication of specified sound absorbing module systems.

The extent of work shall be as specified and include but not be limited to the following:

- Sound absorbing panel modules.
- Acoustical insulation.
- Metal support systems.

1.2 Manufacturer of sound absorbing metal liner panels shall be Industrial Acoustics Company, 1160 Commerce Avenue, Bronx, NY 10462, Tel.: (718) 931-8000, Fax: (718) 863-1138.

1.3 Product Submittals shall include materials specifications, installation, and maintenance instructions with cleaning procedures.

1.4 Certified Test Reports shall be submitted with bid demonstrating compliance with sound absorption coefficients or Sabins specified herein and shall have been conducted in a laboratory accredited by the National Voluntary Laboratory Accreditation Program, NVLAP, for Sound Absorption Tests by the Reverberation Room Method, ASTM C 423.

2.0 MATERIALS

2.1 Face sheets shall be minimum 20 gauge G90, 0.0396 in. (1.01mm), galvanized (per ASTM A 525) pre-finished steel or aluminum *(select one)*. The face panel shall have sufficient rigidity to provide panel flatness not exceeding a deflection of L/240 as measured diagonally across the panel.

2.2 Pre-finished Material Options *(all NF Types except NF-II):* Panels shall be finished with *(select one)* 8 mil (0.203mm) thick vinyl, 3 mil (0.076mm) thick polyester powder, or a 1 mil (0.025mm) polyester baked enamel. All trim pieces shall be factory-painted with a modified alkyd-baked enamel to match prefinished color selected by architect or owner.

2.3 Painted Option *(all NF Types)* : All panels and trim shall be factory-painted with a modified alkyd-baked enamel. Color to be selected by architect or owner.

2.4. Face sheet perforations shall be round and diagonally centered with a maximum diameter of 3/16 in. (4.76mm) on 3/8 in. (9.53mm) staggered centers; open area of approximately 23%.

2.5. Acoustical insulation shall be sound absorbing fiberglass infill, U.L. fire classified with flame spread 25 maximum, smoke developed 50 maximum per ASTM E 84.

2.6 Fill Protection Options *(Select one or both)*

2.6.1 Infill shall be enclosed in polyethylene wrap as recommended by acoustical metal liner panel manufacturer; shall be U.L. classified with flame spread 25 maximum and smoke developed 50 per ASTM E 84.

2.6.2 Infill shall be separated from perforated face sheet by 1/4 in. (6.35mm) acoustic reactive spacer.

2.7 All exposed metal trim shall be minimum 18 gauge (1.31mm) G90 galvanized (per ASTM A 525) steel.

3.0 ACOUSTICAL PERFORMANCE

3.1 Panel Modules, when tested in accordance with ASTM C 423, shall produce minimum *(select one or more)* sound absorption coefficients, Table 1; Sabins per panel array, Table 2; or Sabins per panel, Table 3, as follows:

1/3 Octave Band Center Frequency, Hz						
125	250	500	1000	2000	4000	NRC

insert appropriate values from Table 1, 2, or 3

4.0 PANEL PENETRATIONS

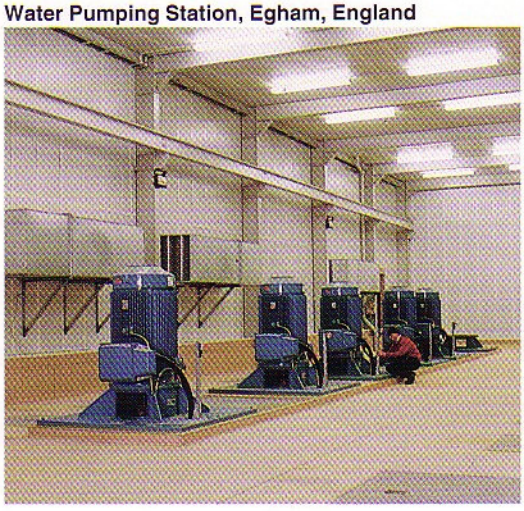
4.1 A channel-shaped steel molding shall be installed on panels wherever panels have to be cut to fit. The molding must close the panel to preclude any loss of panel fill materials. All reinforcing channels shall be installed so as not to compromise the acoustic and structural properties of system. Any fasteners which may be required due to field cutting shall be concealed wherever possible.

All designs and specifications subject to change without notice. (Metric dimensions in parentheses ( ) nominal).

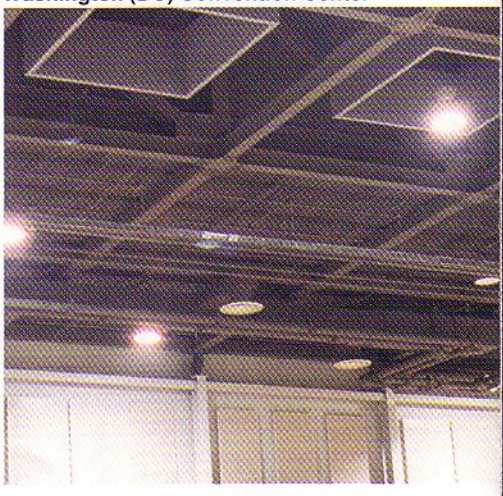
OTHER APPLICATIONS

Correctional Facility, Palm Beach County, Florida

Water Pumping Station, Egham, England



Washington (DC) Convention Center



iac
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FAX: (718) 863-1138

UNITED KINGDOM
CENTRAL TRADING ESTATE
STAINES, MIDDLESEX, TW18 4XB
PHONE: (0784) 456-251
FAX: (0784) 463-303, TELEX: 25518

GERMANY
SOHLWEG 17
D-41372 NIEDERKRÜCHTEN
PHONE: (02163) 8431
FAX: (02163) 80618

TECHNICAL REPRESENTATION IN PRINCIPAL CITIES THROUGHOUT THE WORLD

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APPENDIX I

Noise Measurements

Table I-1. Noise Survey

Project: Helen Woodward Animal Center

Position: #1, at fire station on El Apajo

Date: April 15, 2005

Time: Noted

Noise Source: Traffic on El Apajo

Distance: 25'-6" from curb of El Apajo

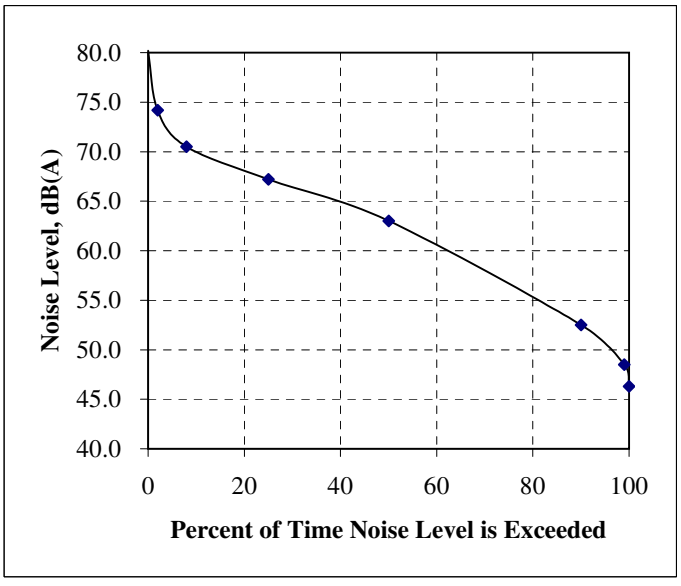
SLM Height: 5'

LD 712 S/N: 0555

LD CAL150
Calibrator S/N: 2206

Operator: J.T. Stephens

	Measurement Period		
	10:42 AM to 11:02 AM	to	to
n*	**Ln**	**Ln**	**Ln**
2	74.2		
8	70.5		
25	67.2		
50	63.0		
90	52.5		
99	48.5		
Leq	66.3		
Lmax	80.2		
Lmin	46.3		



* Leq is the average sound level during the measurement period.
Ln is the sound level exceeded n% of the time during the measurement period.
Lmax and Lmin are the maximum and minimum sound levels during the measurement period.

Table I-2. Noise Survey

Project: Helen Woodward Animal Center

Position: #2, parking lot of Horizon North County, at offset of nearest playground to HWAC

Date: April 14, 2005

Time: Noted

Noise Source: Traffic on El Apajo, dogs at HWAC, parking lot activities at church

Distance: 43'-6" from HWAC property line

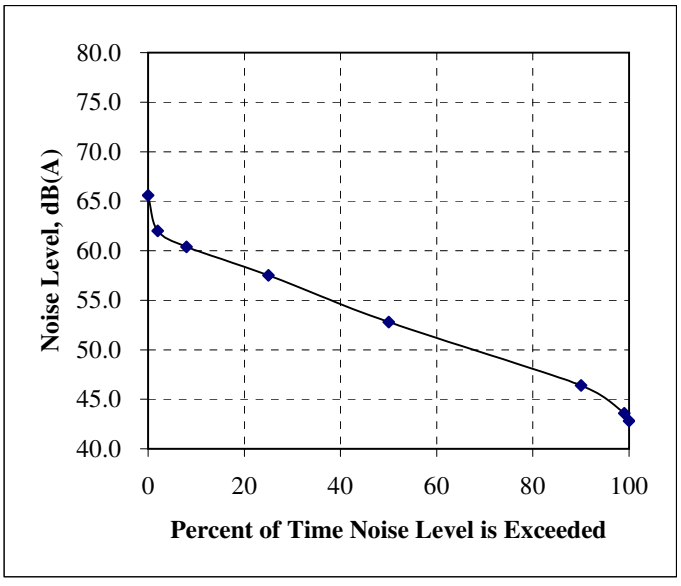
SLM Height: 5'

LD 712 S/N: 0555

LD CAL150 Calibrator S/N: 2206

Operator: J.T. Stephens

	Measurement Period		
	1:40 PM to 2:00 PM	to	to
n*	**Ln**	**Ln**	**Ln**
2	62.0		
8	60.4		
25	57.5		
50	52.8		
90	46.4		
99	43.6		
Leq	55.8		
Lmax	65.6		
Lmin	42.8		



* Leq is the average sound level during the measurement period.
Ln is the sound level exceeded n% of the time during the measurement period.
Lmax and Lmin are the maximum and minimum sound levels during the measurement period.

Table I-3. Noise Survey

Project: Helen Woodward Animal Center

Position: #3, in parking lot of shopping center opposite HWAC picnic area

Date: April 14, 2005

Time: Noted

Noise Source: Traffic, animals, kids playing

Distance: 14' from HWAC property line

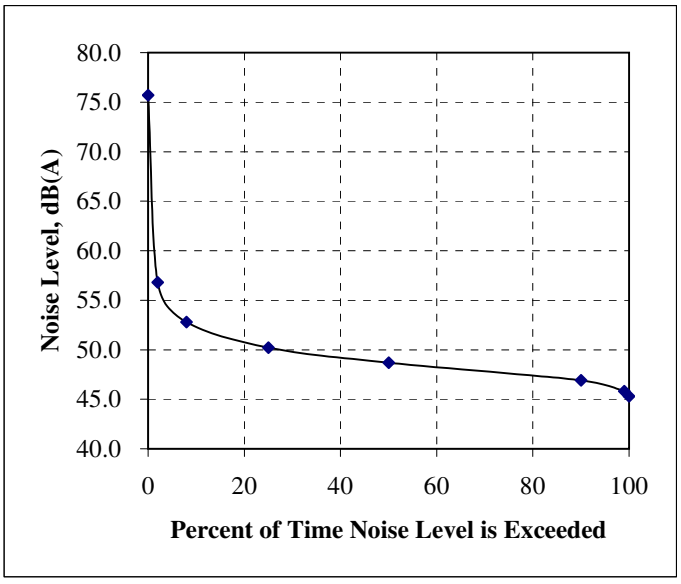
SLM Height: 5'

LD 712 S/N: 0555

LD CAL150 Calibrator S/N: 2206

Operator: J.T. Stephens

	Measurement Period		
	2:10 PM to 2:34 PM	to	to
n*	**Ln**	**Ln**	**Ln**
2	56.8		
8	52.8		
25	50.2		
50	48.7		
90	46.9		
99	45.8		
Leq	51.4		
Lmax	75.7		
Lmin	45.3		

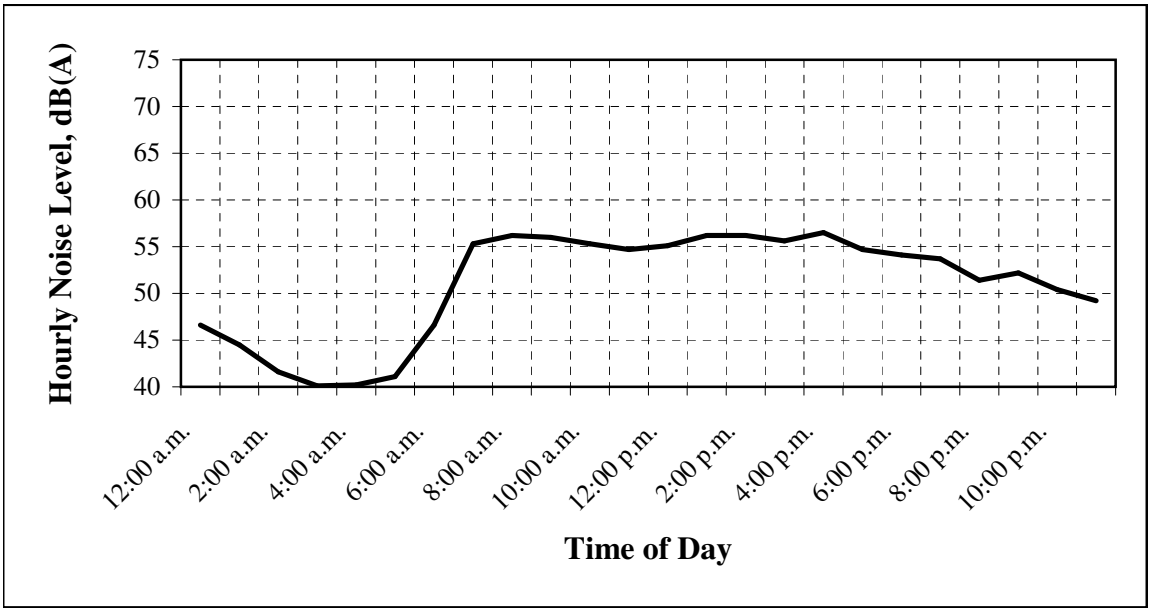


* Leq is the average sound level during the measurement period.
Ln is the sound level exceeded n% of the time during the measurement period.
Lmax and Lmin are the maximum and minimum sound levels during the measurement period.

Table I-4. Measured Hourly Noise Levels & Community Noise Equivalent Level, CNEL

Project: Helen Woodward Animal Center
Location: Rear yard of 15490 Pimlico Court
Date: April 14-15, 2005

Measurement Period	Hourly Noise Level, dB(A)		Measurement Period	Hourly Noise Level, dB(A)
12:00 am - 1:00 am	46.6		12:00 pm - 1:00 pm	55.1
1:00 am - 2:00 am	44.5		1:00 pm - 2:00 pm	56.2
2:00 am - 3:00 am	41.6		2:00 pm - 3:00 pm	56.2
3:00 am - 4:00 am	40.1		3:00 pm - 4:00 pm	55.6
4:00 am - 5:00 am	40.2		4:00 pm - 5:00 pm	56.5
5:00 am - 6:00 am	41.1		5:00 pm - 6:00 pm	54.7
6:00 am - 7:00 am	46.6		6:00 pm - 7:00 pm	54.1
7:00 am - 8:00 am	55.3		7:00 pm - 8:00 pm	53.7
8:00 am - 9:00 am	56.2		8:00 pm - 9:00 pm	51.4
9:00 am - 10:00 am	56.0		9:00 pm - 10:00 pm	52.2
10:00 am -11:00 am	55.3		10:00 pm - 11:00 pm	50.4
11:00 am - 12:00 pm	54.7		11:00 pm - 12:00 am	49.2
			CNEL:	***56.0***



APPENDIX II

Traffic Noise Model Calibration

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : APAJCAL.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 01-01-2006

El Apajo Cal

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	178	45	2	45	1	45	Cal
2	136	45	1	45	1	45	Cal

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	0.0	5.0	67	500	Cal

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 0.7 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
El Apajo Cal

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
Cal	63.3

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : SANCAL.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 01-01-2006

San Dieguito Cal

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	185	45	5	45	4	45	Cal
2	136	45	1	45	1	45	Cal

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	79.8	0.0	L1 P1
			1000.0	79.8	0.0	L1 P2
2	1	NO	-1000.0	55.7	0.0	L2 P1
			1000.0	55.7	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	0.0	5.0	67	500	Cal

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = -0.8 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
San Dieguito Cal

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
Cal	60.0

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : VIACAL.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 01-01-2006

Via de Santa Fe Cal

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	89	45	0	45	0	45	Cal
2	216	45	1	45	0	45	Cal

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	0.0	5.0	67	500	Cal

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 1.8 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Via de Santa Fe Cal

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
Cal	63.9

APPENDIX III

Traffic Noise Analysis

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : APAJEXIS.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

El Apajo Existing

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	467	45	20	45	5	45	Existing
2	467	45	20	45	5	45	Existing

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-7.0	5.0	67	500	70 dB
2	0.0	-125.0	5.0	67	500	65 dB
3	0.0	-395.0	5.0	67	500	60 dB
4	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 2.1 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
El Apajo Existing

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
70 dB	70.0
65 dB	65.0
60 dB	60.0
@ 50'	71.0

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : APAJEXPR.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

El Apajo Existing + Project

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	469	45	20	45	5	45	Existing + Project
2	469	45	20	45	5	45	Existing + Project

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-7.0	5.0	67	500	70 dB
2	0.0	-126.0	5.0	67	500	65 dB
3	0.0	-400.0	5.0	67	500	60 dB
4	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 2.1 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
El Apajo Existing + Project

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
70 dB	70.0
65 dB	65.0
60 dB	60.0
@ 50'	71.1

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : APAJEXCM.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

El Apajo Existing + Cumulative

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	485	45	20	45	5	45	Existing + Cumulative
2	485	45	20	45	5	45	Existing + Cumulative

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-9.0	5.0	67	500	70 dB
2	0.0	-127.0	5.0	67	500	65 dB
3	0.0	-405.0	5.0	67	500	60 dB
4	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 2.1 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
El Apajo Existing + Cumulative

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
70 dB	70.0
65 dB	65.0
60 dB	60.0
@ 50'	71.2

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : APAJEXCP.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

El Apajo Existing + Cumulative + Project

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	486	45	20	45	5	45	Existing + Cumulative + Proj
2	486	45	20	45	5	45	Existing + Cumulative + Proj

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-9.0	5.0	67	500	70 dB
2	0.0	-128.0	5.0	67	500	65 dB
3	0.0	-405.0	5.0	67	500	60 dB
4	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 2.1 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
El Apajo Existing + Cumulative + Project

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
70 dB	70.0
65 dB	65.0
60 dB	60.0
@ 50'	71.2

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : DIOSEXIS.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Del Dios Hwy. Existing

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	698	50	29	50	7	50	Existing
2	698	50	29	50	7	50	Existing

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-12.0	5.0	67	500	70 dB
2	0.0	-88.0	5.0	67	500	65 dB
3	0.0	-238.0	5.0	67	500	60 dB
4	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 1.4 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Del Dios Hwy. Existing

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
70 dB	70.0
65 dB	65.0
60 dB	60.0
@ 50'	72.1

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : DIOSEXPR.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Del Dios Hwy. Existing + Project

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	699	50	29	50	7	50	Existing+Proj
2	699	50	29	50	7	50	Existing+Proj

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-12.0	5.0	67	500	70 dB
2	0.0	-88.0	5.0	67	500	65 dB
3	0.0	-238.0	5.0	67	500	60 dB
4	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 1.4 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Del Dios Hwy. Existing + Project

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
70 dB	70.0
65 dB	65.0
60 dB	60.0
@ 50'	72.1

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : DIOSEXCM.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Del Dios Hwy. Existing + Cumulative

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	734	50	31	50	8	50	Existing+Cumulative
2	734	50	31	50	8	50	Existing+Cumulative

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-15.0	5.0	67	500	70 dB
2	0.0	-94.0	5.0	67	500	65 dB
3	0.0	-250.0	5.0	67	500	60 dB
4	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 1.4 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Del Dios Hwy. Existing + Cumulative

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
70 dB	70.0
65 dB	65.0
60 dB	60.0
@ 50'	72.4

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : DIOSEXCP.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Del Dios Hwy. Existing + Cumulative + Project

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	735	50	31	50	8	50	Existing+Cum+Proj
2	735	50	31	50	8	50	Existing+Cum+Proj

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-15.0	5.0	67	500	70 dB
2	0.0	-94.0	5.0	67	500	65 dB
3	0.0	-250.0	5.0	67	500	60 dB
4	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 1.4 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Del Dios Hwy. Existing + Cumulative + Project

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
70 dB	70.0
65 dB	65.0
60 dB	60.0
@ 50'	72.4

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : PASOEXIS.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Paseo Delicias Existing

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	653	50	28	50	7	50	Existing
2	653	50	28	50	7	50	Existing

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-10.0	5.0	67	500	70 dB
2	0.0	-82.0	5.0	67	500	65 dB
3	0.0	-228.0	5.0	67	500	60 dB
4	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 1.4 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Paseo Delicias Existing

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
70 dB	70.0
65 dB	65.0
60 dB	60.0
@ 50'	71.9

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : PASOEXPR.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Paseo Delicias Existing + Project

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	660	50	28	50	7	50	Existing+Proj
2	660	50	28	50	7	50	Existing+Proj

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-10.0	5.0	67	500	70 dB
2	0.0	-84.0	5.0	67	500	65 dB
3	0.0	-228.0	5.0	67	500	60 dB
4	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 1.4 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Paseo Delicias Existing + Project

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
70 dB	70.0
65 dB	65.0
60 dB	60.0
@ 50'	71.9

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : PASOEXCM.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Paseo Delicias Existing + Cumulative

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	709	50	30	50	7	50	Existing+Cumulative
2	709	50	30	50	7	50	Existing+Cumulative

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-13.0	5.0	67	500	70 dB
2	0.0	-90.0	5.0	67	500	65 dB
3	0.0	-240.0	5.0	67	500	60 dB
4	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 1.4 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Paseo Delicias Existing + Cumulative

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
70 dB	70.0
65 dB	65.0
60 dB	60.0
@ 50'	72.2

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : PASOEXCP.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Paseo Delicias Existing + Cumulative + Project

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	710	50	30	50	7	50	Existing+Cum+Proj
2	710	50	30	50	7	50	Existing+Cum+Proj

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-13.0	5.0	67	500	70 dB
2	0.0	-90.0	5.0	67	500	65 dB
3	0.0	-240.0	5.0	67	500	60 dB
4	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 1.4 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Paseo Delicias Existing + Cumulative + Project

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
70 dB	70.0
65 dB	65.0
60 dB	60.0
@ 50'	72.2

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : SANEXIST.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

San Dieguito Existing

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	447	45	19	45	5	45	Existing
2	447	45	19	45	5	45	Existing

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	80.0	0.0	L1 P1
			1000.0	80.0	0.0	L1 P2
2	1	NO	-1000.0	56.0	0.0	L2 P1
			1000.0	56.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	18.0	5.0	67	500	@ 50'
2	0.0	-16.0	5.0	67	500	65 dB
3	0.0	-106.0	5.0	67	500	60 dB

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 0.6 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
San Dieguito Existing

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
@ 50'	68.7
65 dB	65.0
60 dB	60.0

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : SANEXPR.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

San Dieguito Existing + Project

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	447	45	19	45	5	45	Existing + Project
2	447	45	19	45	5	45	Existing + Project

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	80.0	0.0	L1 P1
			1000.0	80.0	0.0	L1 P2
2	1	NO	-1000.0	56.0	0.0	L2 P1
			1000.0	56.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	18.0	5.0	67	500	@ 50'
2	0.0	-16.0	5.0	67	500	65 dB
3	0.0	-106.0	5.0	67	500	60 dB

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 0.6 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
San Dieguito Existing + Project

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
@ 50'	68.7
65 dB	65.0
60 dB	60.0

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : SANEXCM.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

San Dieguito Existing + Cumulative

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	458	45	19	45	5	45	Existing + Cumulative
2	458	45	19	45	5	45	Existing + Cumulative

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	80.0	0.0	L1 P1
			1000.0	80.0	0.0	L1 P2
2	1	NO	-1000.0	56.0	0.0	L2 P1
			1000.0	56.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	18.0	5.0	67	500	@ 50'
2	0.0	-17.0	5.0	67	500	65 dB
3	0.0	-108.0	5.0	67	500	60 dB

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 0.6 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
San Dieguito Existing + Cumulative

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
@ 50'	68.8
65 dB	65.0
60 dB	60.0

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : SANEXCP.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

San Dieguito Existing + Cumulative + Project

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	478	45	20	45	5	45	Existing + Cumulative + Proj
2	478	45	20	45	5	45	Existing + Cumulative + Proj

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	80.0	0.0	L1 P1
			1000.0	80.0	0.0	L1 P2
2	1	NO	-1000.0	56.0	0.0	L2 P1
			1000.0	56.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	18.0	5.0	67	500	@ 50'
2	0.0	-19.0	5.0	67	500	65 dB
3	0.0	-112.0	5.0	67	500	60 dB

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 0.6 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
San Dieguito Existing + Cumulative + Project

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
@ 50'	68.9
65 dB	65.0
60 dB	60.0

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : VALLEXIS.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Via De La Valle Existing

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	380	50	16	50	4	50	Existing
2	380	50	16	50	4	50	Existing

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-42.0	5.0	67	500	65 dB
2	0.0	-148.0	5.0	67	500	60 dB
3	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 1.4 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Via De La Valle Existing

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
65 dB	65.0
60 dB	60.0
@ 50'	69.5

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : VALLEXPR.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Via De La Valle Existing + Project

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	382	50	16	50	4	50	Existing+Project
2	382	50	16	50	4	50	Existing+Project

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-42.0	5.0	67	500	65 dB
2	0.0	-148.0	5.0	67	500	60 dB
3	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 1.4 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Via De La Valle Existing + Project

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
65 dB	65.0
60 dB	60.0
@ 50'	69.5

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : VALLEXCM.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Via De La Valle Existing + Cumulative

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	432	50	18	50	5	50	Existing+Cumulative
2	432	50	18	50	5	50	Existing+Cumulative

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	5.0	5.0	67	500	70 dB
2	0.0	-51.0	5.0	67	500	65 dB
3	0.0	-166.0	5.0	67	500	60 dB
4	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 1.4 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Via De La Valle Existing + Cumulative

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
70 dB	70.0
65 dB	65.0
60 dB	60.0
@ 50'	70.1

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : VALLEXCP.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Via De La Valle Existing + Cumulative + Project

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	434	50	18	50	5	50	Existing+Cumulative+Project
2	434	50	18	50	5	50	Existing+Cumulative+Project

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	5.0	5.0	67	500	70 dB
2	0.0	-51.0	5.0	67	500	65 dB
3	0.0	-166.0	5.0	67	500	60 dB
4	0.0	6.0	5.0	67	500	@ 50'

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 1.4 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Via De La Valle Existing + Cumulative + Project

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
70 dB	70.0
65 dB	65.0
60 dB	60.0
@ 50'	70.1

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : VIAEXIST.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Via de Santa Fe Existing

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	454	45	19	45	5	45	Existing
2	454	45	19	45	5	45	Existing

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	6.0	5.0	67	500	@50'
2	0.0	-22.0	5.0	67	500	70 dB
3	0.0	-160.0	5.0	67	500	65 dB
4	0.0	-475.0	5.0	67	500	60 dB

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 3.2 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Via de Santa Fe Existing

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
@50'	72.0
70 dB	70.0
65 dB	65.0
60 dB	60.0

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : VIAEXPR.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Via de Santa Fe Existing + Project

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	457	45	19	45	5	45	Existing + Project
2	457	45	19	45	5	45	Existing + Project

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	6.0	5.0	67	500	@50'
2	0.0	-22.0	5.0	67	500	70 dB
3	0.0	-164.0	5.0	67	500	65 dB
4	0.0	-475.0	5.0	67	500	60 dB

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 3.2 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Via de Santa Fe Existing + Project

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
@50'	72.0
70 dB	70.0
65 dB	65.0
60 dB	60.0

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : VIAEXCM.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Via de Santa Fe Existing + Cumulative

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	477	45	20	45	5	45	Existing + Cumulative
2	477	45	20	45	5	45	Existing + Cumulative

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	6.0	5.0	67	500	@50'
2	0.0	-25.0	5.0	67	500	70 dB
3	0.0	-170.0	5.0	67	500	65 dB
4	0.0	-490.0	5.0	67	500	60 dB

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 3.2 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Via de Santa Fe Existing + Cumulative

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
@50'	72.2
70 dB	70.0
65 dB	65.0
60 dB	60.0

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : VIAEXCP.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Via de Santa Fe Existing + Cumulative + Project

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	480	45	20	45	5	45	Existing + Cumulative + Proj
2	480	45	20	45	5	45	Existing + Cumulative + Proj

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	62.0	0.0	L1 P1
			1000.0	62.0	0.0	L1 P2
2	1	NO	-1000.0	50.0	0.0	L2 P1
			1000.0	50.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	6.0	5.0	67	500	@50'
2	0.0	-25.0	5.0	67	500	70 dB
3	0.0	-170.0	5.0	67	500	65 dB
4	0.0	-490.0	5.0	67	500	60 dB

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 3.0 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = 3.2 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Via de Santa Fe Existing + Cumulative + Project

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
@50'	72.2
70 dB	70.0
65 dB	65.0
60 dB	60.0

* * SOUND32 (CALTRANS VERSION OF STAMINA2/OPTIMA) * *

INPUT DATA FILE : B1APTFUT.S32
BARRIER COST FILE : CALIF$.DTA
DATE : 08-01-2007

Existing+Cumulative+Project Leq at Facades from San Dieguito

TRAFFIC DATA

LANE NO.	AUTO VPH	AUTO MPH	MEDIUM TRKS VPH	MEDIUM TRKS MPH	HEAVY TRKS VPH	HEAVY TRKS MPH	DESCRIPTION
1	478	45	20	45	5	45	Existing+Cumulative+Project
2	478	45	20	45	5	45	Existing+Cumulative+Project

LANE DATA

LANE NO.	SEG. NO.	GRADE COR.	X	Y	Z	SEGMENT DESCRIPTION
1	1	NO	-1000.0	56.0	0.0	L1 P1
			1000.0	56.0	0.0	L1 P2
2	1	NO	-1000.0	80.0	0.0	L2 P1
			1000.0	80.0	0.0	L2 P2

RECEIVER DATA

REC. NO.	X	Y	Z	DNL	PEOPLE	ID
1	0.0	-133.0	5.0	67	500	Yard
2	0.0	-224.0	5.0	67	500	Bldg. 2

DROP-OFF RATES

ALL LANE/RECEIVER PAIRS = 4.5 DBA

K - CONSTANTS

ALL LANE RECEIVER/PAIRS = -0.7 DBA

SOUND32 - RELEASE 07/30/91

TITLE:
Existing+Cumulative+Project Leq at Facades from San Dieguito

BASED ON FHWA-RD-108 AND
CALIFORNIA REFERENCE ENERGY MEAN EMISSION LEVELS

RECEIVER	LEQ
Yard	57.9
Bldg. 2	55.2

APPENDIX IV

Analysis of Unmitigated Facility Noise Levels

Table IV-1. Estimated Mechanical Equipment Noise Levels at Position M1 Without Mitigation

Reference Point (0, 0):	South West Corner of Site				
X Direction:	North-South				
Y Direction:	East-West				
Receiver Position:	970.5	-243	5	(X, Y, Z)	M1, north property line

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITHOUT MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			27.5	31.3	33.4	30.8	27.1	23.0	18.8	37.8
Building II			20.8	23.5	26.6	24.1	19.4	16.2	12.6	30.8
Building III			15.9	19.5	21.4	18.7	14.9	11.9	7.8	25.9
Emergency Generator			17.9	25.9	33.9	37.9	39.9	37.9	27.9	44.1
Overall:			29.0	33.1	37.2	38.9	40.2	38.1	28.6	45.2

Table IV-2. Estimated Mechanical Equipment Noise Levels at Position M2 Without Mitigation

Reference Point (0, 0):	South West Corner of Site				
X Direction:	North-South				
Y Direction:	East-West				
Receiver Position:	631.5	0	5	(X, Y, Z)	M2, west property line

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITHOUT MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			28.8	32.1	33.9	31.2	27.4	25.4	21.3	38.5
Building II			25.5	28.1	31.2	28.6	23.8	20.8	17.4	35.4
Building III			17.7	21.4	23.4	20.8	17.0	13.5	9.4	27.9
Emergency Generator			20.8	28.8	36.8	40.8	42.8	40.8	30.8	47.0
Overall:			31.1	35.0	39.4	41.5	43.0	41.0	31.5	47.8

Table IV-3. Estimated Mechanical Equipment Noise Levels at Position M3 Without Mitigation

Reference Point (0, 0):	South West Corner of Site				
X Direction:	North-South				
Y Direction:	East-West				
Receiver Position:	227	0	5	(X, Y, Z)	M3, west property line

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITHOUT MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			24.5	28.4	30.7	28.2	24.4	20.2	15.6	35.1
Building II			32.4	34.8	37.6	34.9	30.3	28.2	25.1	41.9
Building III			18.9	22.7	24.9	22.3	18.6	15.1	10.5	29.3
Emergency Generator			25.0	33.0	41.0	45.0	47.0	45.0	35.0	51.2
Overall:			33.9	37.7	43.0	45.5	47.2	45.1	35.5	51.8

Table IV-4. Estimated Mechanical Equipment Noise Levels at Position M4 Without Mitigation

Reference Point (0, 0):	South West Corner of Site				
X Direction:	North-South				
Y Direction:	East-West				
Receiver Position:	93	-486	5	(X, Y, Z)	M4, south property line

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITHOUT MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			22.7	26.8	29.1	26.6	22.9	18.7	13.7	33.5
Building II			27.3	30.1	33.1	30.6	25.8	22.4	19.0	37.3
Building III			23.8	27.1	28.8	26.1	22.3	20.5	16.4	33.5
Emergency Generator			32.0	40.0	48.0	52.0	54.0	52.0	42.0	58.2
Overall:			34.1	40.8	48.3	52.1	54.0	52.0	42.1	58.3

Table IV-5. Estimated Mechanical Equipment Noise Levels at Position M5 Without Mitigation

Reference Point (0, 0):	South West Corner of Site				
X Direction:	North-South				
Y Direction:	East-West				
Receiver Position:	378	-828	5	(X, Y, Z)	M5, east property line

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITHOUT MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			21.1	24.7	26.7	24.0	20.2	17.1	13.0	31.2
Building II			22.1	25.1	28.4	26.0	21.3	17.6	13.4	32.5
Building III			21.0	24.5	26.4	23.8	20.3	17.5	13.4	31.0
Emergency Generator			21.7	29.7	37.7	41.7	43.7	41.7	31.7	47.8
Overall:			27.6	32.6	38.7	41.9	43.7	41.7	31.9	48.1

Table IV-6. Estimated Mechanical Equipment Noise Levels at Position M6 Without Mitigation

Reference Point (0, 0):	South West Corner of Site				
X Direction:	North-South				
Y Direction:	East-West				
Receiver Position:	720	-455.5	5	(X, Y, Z)	M6, east property line

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITHOUT MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			30.0	33.4	35.1	32.4	28.7	26.8	22.7	39.8
Building II			23.4	26.1	29.2	26.6	21.9	18.5	15.1	33.4
Building III			20.6	24.1	25.9	23.2	19.4	16.8	12.7	30.5
Emergency Generator			21.1	29.1	37.1	41.1	43.1	41.1	31.1	47.3
Overall:			31.7	35.6	39.8	41.8	43.3	41.3	31.8	48.2

Table IV-7. Estimated Mechanical Equipment Noise Levels at Nearest Residence to North Without Mitigation

Reference Point (0, 0): South West Corner of Site
X Direction: North-South
Y Direction: East-West

Receiver Position: 1074.5 -243 5 (X, Y, Z)

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITHOUT MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			25.2	29.1	31.3	28.8	25.0	20.8	16.4	35.7
Building II			19.7	22.4	25.5	23.0	18.3	15.1	11.5	29.7
Building III			14.7	18.4	20.3	17.7	13.9	10.7	6.6	24.8
Emergency Generator			16.8	24.8	32.8	36.8	38.8	36.8	26.8	43.0
Overall:			27.1	31.4	35.7	37.7	39.1	37.0	27.4	44.0

Table IV-8. Estimated Mechanical Equipment Noise Levels at Nearest Residence to South Without Mitigation

Reference Point (0, 0): South West Corner of Site
X Direction: North-South
Y Direction: East-West

Receiver Position: -20 -486 35 (X, Y, Z)

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITHOUT MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			22.0	26.5	29.3	27.2	23.7	19.6	12.6	33.7
Building II			27.1	30.6	34.5	32.7	28.5	24.5	19.0	38.7
Building III			22.5	26.7	29.1	26.8	23.2	19.0	13.1	33.5
Emergency Generator			28.5	36.5	44.5	48.5	50.5	48.5	38.5	54.7
Overall:			32.0	38.1	45.1	48.7	50.5	48.5	38.6	54.8

APPENDIX V

Analysis of Mitigated Facility Noise Levels

Table V-1. Estimated Mechanical Equipment Noise Levels at Position M1 With Mitigation

Reference Point (0, 0):	South West Corner of Site				
X Direction:	North-South				
Y Direction:	East-West				
Receiver Position:	970.5	-243	5	(X, Y, Z)	M1, north property line

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITH MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			27.5	31.3	33.4	30.8	27.1	23.0	18.8	37.8
Building II			20.8	23.5	26.6	24.1	19.4	16.2	12.6	30.8
Building III			15.9	19.5	21.4	18.7	14.9	11.9	7.8	25.9
Emergency Generator			10.5	16.9	22.6	23.8	22.9	17.9	7.9	28.7
Overall:			28.7	32.4	34.7	32.5	29.2	25.1	20.7	39.3

Table V-2. Estimated Mechanical Equipment Noise Levels at Position M2 With Mitigation

Reference Point (0, 0):	South West Corner of Site				
X Direction:	North-South				
Y Direction:	East-West				
Receiver Position:	631.5	0	5	(X, Y, Z)	M2, west property line

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITH MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			28.8	32.1	33.9	31.2	27.4	25.4	21.3	38.5
Building II			25.5	28.1	31.2	28.6	23.8	20.8	17.4	35.4
Building III			17.7	21.4	23.4	20.8	17.0	13.5	9.4	27.9
Emergency Generator			12.5	18.4	23.8	24.9	23.9	20.8	10.8	30.1
Overall:			30.8	34.0	36.2	33.9	30.4	27.9	23.5	40.9

Table V-3. Estimated Mechanical Equipment Noise Levels at Position M3 With Mitigation

Reference Point (0, 0):	South West Corner of Site				
X Direction:	North-South				
Y Direction:	East-West				
Receiver Position:	227	0	5	(X, Y, Z)	M3, west property line

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITH MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			24.5	28.4	30.7	28.2	24.4	20.2	15.6	35.1
Building II			32.4	34.8	37.6	34.9	30.3	28.2	25.1	41.9
Building III			18.9	22.7	24.9	22.3	18.6	15.1	10.5	29.3
Emergency Generator			15.4	20.9	26.1	27.1	27.0	25.0	15.0	32.9
Overall:			33.3	36.1	38.8	36.5	32.9	30.6	26.2	43.4

Table V-4. Estimated Mechanical Equipment Noise Levels at Position M4 With Mitigation

Reference Point (0, 0):	South West Corner of Site				
X Direction:	North-South				
Y Direction:	East-West				
Receiver Position:	93	-486	5	(X, Y, Z)	M4, south property line

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITH MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			22.7	26.8	29.1	26.6	22.9	18.7	13.7	33.5
Building II			27.3	30.1	33.1	30.6	25.8	22.4	19.0	37.3
Building III			23.8	27.1	28.8	26.1	22.3	20.5	16.4	33.5
Emergency Generator			22.4	28.0	33.1	34.2	34.0	32.0	22.0	39.9
Overall:			30.6	34.2	37.6	36.7	35.2	32.9	25.0	42.9

Table V-5. Estimated Mechanical Equipment Noise Levels at Position M5 With Mitigation

Reference Point (0, 0):	South West Corner of Site				
X Direction:	North-South				
Y Direction:	East-West				
Receiver Position:	378	-828	5	(X, Y, Z)	M5, east property line

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITH MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			21.1	24.7	26.7	24.0	20.2	17.1	13.0	31.2
Building II			22.1	25.1	28.4	26.0	21.3	17.6	13.4	32.5
Building III			21.0	24.5	26.4	23.8	20.3	17.5	13.4	31.0
Emergency Generator			12.5	18.1	23.4	24.4	23.7	21.7	11.7	29.9
Overall:			26.5	29.9	32.6	30.7	27.7	25.1	19.5	37.3

Table V-6. Estimated Mechanical Equipment Noise Levels at Position M6 With Mitigation

Reference Point (0, 0):	South West Corner of Site				
X Direction:	North-South				
Y Direction:	East-West				
Receiver Position:	720	-455.5	5	(X, Y, Z)	M6, east property line

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITH MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			30.0	33.4	35.1	32.4	28.7	26.8	22.7	39.8
Building II			23.4	26.1	29.2	26.6	21.9	18.5	15.1	33.4
Building III			20.6	24.1	25.9	23.2	19.4	16.8	12.7	30.5
Emergency Generator			11.9	17.6	22.8	23.8	23.1	21.1	11.1	29.3
Overall:			31.4	34.6	36.7	34.2	30.8	28.7	24.2	41.4

Table V-7. Estimated Mechanical Equipment Noise Levels at Nearest Residence to North With Mitigation

Reference Point (0, 0): South West Corner of Site
X Direction: North-South
Y Direction: East-West

Receiver Position: 1074.5 -243 5 (X, Y, Z)

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITH MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			25.2	29.1	31.3	28.8	25.0	20.8	16.4	35.7
Building II			19.7	22.4	25.5	23.0	18.3	15.1	11.5	29.7
Building III			14.7	18.4	20.3	17.7	13.9	10.7	6.6	24.8
Emergency Generator			9.7	16.2	22.0	23.3	22.4	17.4	6.8	28.1
Overall:			26.8	30.5	33.0	30.9	27.7	23.6	18.9	37.5

Table V-8. Estimated Mechanical Equipment Noise Levels at Nearest Residence to South With Mitigation

Reference Point (0, 0): South West Corner of Site
X Direction: North-South
Y Direction: East-West

Receiver Position: -20 -486 35 (X, Y, Z)

ESTIMATED MECHANICAL EQUIPMENT NOISE LEVELS WITH MITIGATION

	Estimated A-Weighted Octave Band Sound Pressure Levels, dB(A)									Lp
Description	**31.5 Hz**	**63 Hz**	**125 Hz**	**250 Hz**	**500 Hz**	**1000 Hz**	**2000 Hz**	**4000 Hz**	**8000 Hz**	**dB(A)**
Building I			22.0	26.5	29.3	27.2	23.7	19.6	12.6	33.7
Building II			27.1	30.6	34.5	32.7	28.5	24.5	19.0	38.7
Building III			22.5	26.7	29.1	26.8	23.2	19.0	13.1	33.5
Emergency Generator			22.5	29.7	36.3	38.3	37.8	32.9	19.9	43.1
Overall:			30.2	34.8	39.4	39.9	38.6	33.8	23.6	45.1

TABLE VARIATION IN SOUND LEVEL WITH BARRIER HEIGHT

Helen Woodward Animal Center — PROJECT NO. 945-07
West parking lot — Aug. 5, 2007

Source: Parking Lot Activity — Source Strength @ 50': 49.2 dB
Point Source — Dist. Adj. Exp.= 0.0
Distance, Source to Barrier: 22' — Distance, Barrier to Receiver: 4'
Left Side of Barrier:-999999.0 — Right Side: 999999.0 — Barrier is a Wall
Left/right position of source is: 0
Height of Source: 3.5' — Elevation of Source: 0.0'
Barrier: 6.0 — Barrier: 0.0
Receiver: 5.0 — Receiver: 0.0

HEIGHT OF BARRIER	SOUND LEVEL WITHOUT BARRIER	PATH DIFF	INSERTION LOSS OF BARRIER	SOUND LEVEL WITH BARRIER
5.0 Ft.	54.9 dBA	0.008'	5.3 dBA	49.6 dBA
5.5	54.9	0.079	7.0	47.9
6.0	54.9	0.221	9.1	45.8
6.5	54.9	0.432	11.0	43.9
7.0	54.9	0.706	12.6	42.3
7.5	54.9	1.034	14.0	40.9
8.0	54.9	1.412	15.2	39.7
8.5	54.9	1.833	16.2	38.7
9.0	54.9	2.291	17.0	37.9
9.5	54.9	2.781	17.6	37.3
10.0	54.9	3.300	18.1	36.8

TABLE VARIATION IN SOUND LEVEL WITH BARRIER HEIGHT

Helen Woodward Animanl Center PROJECT NO. 945-07
Dogs barking @ Club Pet, north property line July 31, 2007

Source: Dogs barking Source Strength @ 50': 65.0 dB
Point Source Dist. Adj. Exp.= 0.0
Distance, Source to Barrier: 74' Distance, Barrier to Receiver: 207'
Left Side of Barrier:-999999.0 Right Side: 999999.0 Barrier is a Wall
Left/right position of source is: 0
Height of Source: 2.0' Elevation of Source: 0.0'
Barrier: 5.0 Barrier: 0.0
Receiver: 5.0 Receiver: 0.0

HEIGHT OF BARRIER	SOUND LEVEL WITHOUT BARRIER	PATH DIFF	INSERTION LOSS OF BARRIER	SOUND LEVEL WITH BARRIER
5.0 Ft.	49.4 dBA	0.045'	6.7 dBA	42.7 dBA
5.5	49.4	0.067	7.3	42.1
6.0	49.4	0.094	8.0	41.4
6.5	49.4	0.126	8.7	40.7
7.0	49.4	0.162	9.4	40.0
7.5	49.4	0.203	10.1	39.3
8.0	49.4	0.249	10.8	38.6
8.5	49.4	0.298	11.4	38.0
9.0	49.4	0.353	12.1	37.3
9.5	49.4	0.412	12.6	36.8
10.0	49.4	0.476	13.2	36.2

TABLE VARIATION IN SOUND LEVEL WITH BARRIER HEIGHT

Helen Woodward Animanl Center PROJECT NO. 945-07
Dogs barking at Adoptions, north property line July 31, 2007

Source: Dogs barking Source Strength @ 50': 65.0 dB
Point Source Dist. Adj. Exp.= 0.0
Distance, Source to Barrier:204' Distance, Barrier to Receiver: 207'
Left Side of Barrier:-999999.0 Right Side: 999999.0 Barrier is a Wall
Left/right position of source is: 0
Height of Source: 2.0' Elevation of Source: 0.0'
Barrier: 5.0 Barrier: 0.0
Receiver: 5.0 Receiver: 0.0

HEIGHT OF BARRIER	SOUND LEVEL WITHOUT BARRIER	PATH DIFF	INSERTION LOSS OF BARRIER	SOUND LEVEL WITH BARRIER
5.0 Ft.	45.3 dBA	0.011'	5.4 dBA	39.8 dBA
5.5	45.3	0.020	5.8	39.5
6.0	45.3	0.031	6.1	39.1
6.5	45.3	0.044	6.6	38.7
7.0	45.3	0.060	7.0	38.2
7.5	45.3	0.078	7.5	37.7
8.0	45.3	0.099	8.0	37.2
8.5	45.3	0.122	8.5	36.7
9.0	45.3	0.148	9.0	36.2
9.5	45.3	0.176	9.5	35.7
10.0	45.3	0.206	10.0	35.3

TABLE VARIATION IN SOUND LEVEL WITH BARRIER HEIGHT

Helen Woodward Animanl Center PROJECT NO. 945-07
Dogs barking @Club Pet or Adoptions, west property line July 31, 2007

Source: Dogs barking Source Strength @ 50': 65.0 dB
Point Source Dist. Adj. Exp.= 0.0
Distance, Source to Barrier: 32' Distance, Barrier to Receiver: 79'
Left Side of Barrier:-999999.0 Right Side: 999999.0 Barrier is a Wall
Left/right position of source is: 0
Height of Source: 2.0' Elevation of Source: 0.0'
Barrier: 5.0 Barrier: 0.0
Receiver: 5.0 Receiver: 0.0

HEIGHT OF BARRIER	SOUND LEVEL WITHOUT BARRIER	PATH DIFF	INSERTION LOSS OF BARRIER	SOUND LEVEL WITH BARRIER
5.0 Ft.	58.0 dBA	0.100'	8.3 dBA	49.7 dBA
5.5	58.0	0.152	9.5	48.6
6.0	58.0	0.215	10.5	47.5
6.5	58.0	0.289	11.6	46.5
7.0	58.0	0.373	12.5	45.5
7.5	58.0	0.468	13.4	44.6
8.0	58.0	0.574	14.2	43.8
8.5	58.0	0.690	15.0	43.0
9.0	58.0	0.817	15.7	42.3
9.5	58.0	0.955	16.3	41.7
10.0	58.0	1.102	16.9	41.1